

Final Examinations

of Some Governorates



2022

1 Cairo Governorate

Heliopolis Education Zone

Answer the following questions :

Question 1

A Choose the correct answer :

1. If the distance between the center of the fifth compression and the center of the ninth compression of a longitudinal wave is 4m, then the wavelength of this wave is

- a. 9 m. b. 1.2 m. c. 1.5 m. d. 1 m.

2. The measuring unit of noise intensity is

- a. Decibel. b. Hz. c. watt/m². d. meter.

3. All the following plants reproduce sexually except

- a. bean plant. b. pea plant. c. potato. d. olive plant.

4. White light analyzes into spectrum colours.

- a. 3 b. 5 c. 7 d. 9

B Compare between each of the following :

1. Longitudinal wave and transverse waves, (According to the vibration of particles only).
2. Pollination by air and pollination by insects. (Two characteristics of the flower).

C Calculate the number of gear teeth if savart's wheel rotates with a velocity of 300 cycles in one minute, given that the frequency is 100 Hz.

Question 2

A Give reasons for :

1. We see lightning before hearing thunder.
2. The quantum of energy of violet light is greater than the quantum of energy of red light.
3. Palm flowers are unisexual.
4. Clear glass is a transparent medium.

B Mention the function of the following :

1. Ultrasonic waves in medical field.
2. Corolla.
3. Triangular glass prism.
4. Tissue culture.

C What happens if ... ?

1. A light ray falls perpendicular on a reflecting surface.
2. A pollen grain falls on the stigma of a flower.

Question 3

A Correct the underlined words :

- Human can distinguish sounds of frequencies between 10:20Hz.
- Sweet potato is considered as a stem.
- Estrogen hormone is responsible for continuity of the pregnancy.
- Bract is a group of flowers arranged on the same axle.

B From the opposite figure, choose the correct answer :

1. The periodic time =

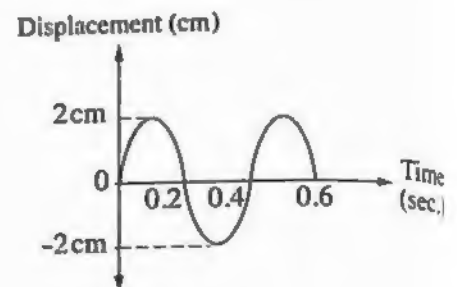
- | | |
|------------|------------|
| a. 0.2 sec | b. 0.4 sec |
| c. 0.6 sec | d. 0.4 m |

2. Frequency =

- | | |
|------------------|-----------|
| a. 0.2 sec | b. 0.4 Hz |
| c. 2.5 cycle/sec | d. 0.4 cm |

3. The amplitude =

- | | | | |
|------------|------------|---------|-----------|
| a. 0.2 sec | b. 0.4 sec | c. 2 cm | d. 0.4 cm |
|------------|------------|---------|-----------|



C Cross the odd word out, then state the relation among the remaining words :

- Sound waves, Light waves, Radio waves, Infrared waves.
- Red, Orange, While, Violet.

Question 4

A Write the scientific term :

- The reproduction of some plants by parts of the root, stem or leaves.
- Sound waves of frequencies less than 20 Hertz.
- Fusion of the nucleus of the male cell with the nucleus of the female cell.
- The ratio between the speed of light in air and its speed in a transparent medium.

B Put (✓) or (✗), then correct the false one (s) :

- Stigma is the male reproductive organ in the flower. (
- The light ray refracts towards the normal when it travels from air to glass. (
- Bats, dogs and dolphins can hear ultrasonic waves. (
- The movement of pendulum is an example for the wave motion. (

C What is the meant by ... ?

- | | |
|---------------------|-----------------|
| 1. Light intensity. | 2. Sonic waves. |
|---------------------|-----------------|

2 Cairo Governorate

El Sahel Educational Zone

Answer the following questions :

Question 1

A Complete the following sentences :

1. Ultrasonic waves are used in and
2. The sound pitch by the frequency and vice versa.
3. is the measuring unit of sound intensity, while is the measuring unit of noise intensity.
4. Angle of is the angle between the reflected light ray and at the point of incidence on the reflecting surface.

B What is meant by ... ?

1. The frequency of tuning fork is 652 Hz.
2. Transparent medium.
3. The absolute refractive index of glass is 1.5
4. Mixed pollination.

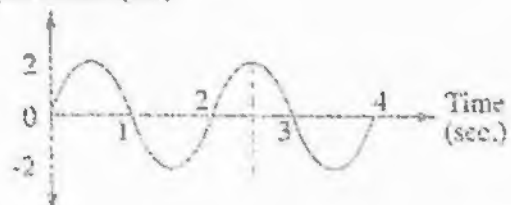
C Mention the importance of petals.

Question 2

A The opposite figure represents oscillatory motion. Find :

1. Amplitude.
2. Periodic time.
3. Frequency.
4. Time of one amplitude.

Displacement (cm)



B Give reasons for :

1. The ray falling perpendicular on the reflecting surface reflect on itself.
2. We see lightning before hearing thunder.
3. Palm flowers are unisexual.

C Calculate the number of teeth of Savart's wheel. Given that the frequency of sound produced is 100Hz and the wheel rotates with 30 cycles/mins.

Question 3

A Write the scientific term for each of the following :

1. It is the fourth whorl of the floral leaves and it produces ovules.
2. The ability of medium to refract light ray.

3. It is the angle between the emergent light ray and the normal at the point of emergence on the interface.

4. They are sound waves of frequency ranging from 20 to 20000 Hz.

B Compare between :

1. Sound pitch – Sound intensity. 2. Pollination – Fertilization.

C Correct the following sentences :

1. The human skin is considered translucent medium.
2. Light refraction is rebounding of light wave in the same medium.

Question **4**

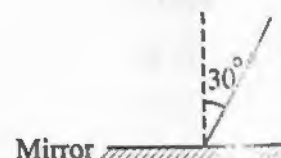
A Choose the correct answer :

1. If the frequency of an oscillating body is 6Hz, so the periodic time is second.
a. 1 b. $\frac{1}{6}$ c. 6
2. Zygote contains of genetic material of plant species.
a. half b. all c. quarter
3. In reflection, the reflected light rays are reflected in many directions.
a. irregular b. regular c. no answer
4. Flowers which produce light and dry pollen grains are pollinated by
a. man. b. air. c. water.

B Give one difference between :

1. Mechanical waves and electromagnetic waves.
2. Stamen and carpel.

C Complete by drawing :



3 Cairo Governorate

Helwan Educational Zone

Answer the following questions :

Question **1**

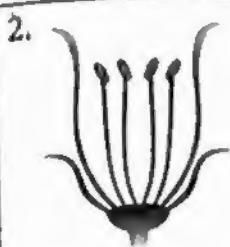
A Write the scientific term of each of the following :

1. The periodic motion made by the oscillating body around its rest point.
2. The ability of the transparent medium to refract light.
3. The outer whorl of floral leaves and protects the internal parts of flower before blooming
4. The disturbance which causes the particles of the medium to vibrate perpendicular to the direction of wave propagation.

Look at the opposite figures, then answer the following questions :

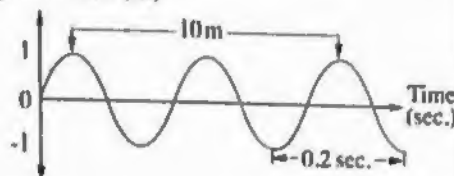


Why the sound of this animal is harsh (rough) ?

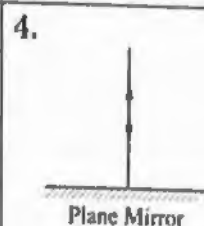


What is the sex of this flower ?

3. Displacement (m)



Calculate the wave velocity.



What is the value of angle of reflection ?

Give reason for : we see lightning before hearing the thunder.

Question 2

A Choose the odd word out :

1. Light waves – Water waves – Radio waves – Micro waves.
2. Break down kidney stones – Discovery of land mines – Sterilize food – Analyze light.
3. Olive – Beans – Peas – Watermelon.
4. Seminal vesicles – Prostate gland – Pancreas gland – Cowper's glands.

B Complete the following sentences :

1. In the opposite figure : The periodic time = sec.
2. The energy of photon of violet light is that of green light.
3. Potato and sweet potato vegetative reproduce by
4. When the distance between the sound source and the car is doubled, sound intensity



C Oscillating body makes 240 complete oscillations in one minute. Calculate its frequency.

Question 3

A Choose the correct answer :

1. If the distance between the centers of the third and the seventh compressions on the wave propagation is 12 cm., the wavelength of this wave is cm.
a. 5 b. 4 c. 3 d. 12
2. If the angle of incidence of light in air = 40° , its angle of refraction in water =
a. 40° b. 15° c. 50° d. 80°
3. In plant, after fertilization process, the ovary grows to become
a. fruit. b. seed. c. pollen grain. d. sperm.
4. The level of sound intensity is measured in
a. Watt/m^2 b. Newton. c. Cm^3 d. Decibel.

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Energy	a. light reflects irregularly on it.
2. 50 Hertz	b. is a frequency of infrasonic wave.
3. Leaf of tree	c. secretes hormone of progesterone.
4. The ovary	d. is a frequency of sonic wave.
	e. transfers among particles of medium by wave.

C What happens when tie a part of peach (as scion) with a part of apricot (as stock) ?

Question 4

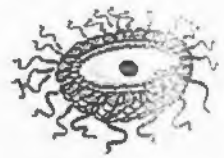
A Put (✓) or (✗) in front of each of the following statements and correct the wrong ones :

- Complete oscillation has four amplitudes. ()
- Fundamental tone's intensity is lower than harmonic tone. ()
- Air pollinated flowers produce huge numbers of pollen grains. ()
- The absolute refractive index of any medium is always less than one. ()

B Correct the underline word :

- The trough of the transverse wave is equivalent to the center of compression of the longitudinal wave.
- Light passes easily through opaque medium.
- Two testes secrete male sex hormone "Estrogen".
- In regular reflection : The angle of incidence is more than the angle of reflection.

C The opposite figure is showing one step of reproduction in man. Explain this step briefly.



4 Cairo Governorate

Heliopolis Modern Language School

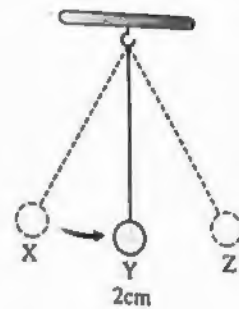
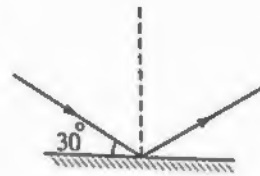
Answer the following questions :

Question 1

A Complete the following sentences :

- Waves are classified according to the ability of propagation into waves and waves.
- Fertilization is the process of fusion of nucleus of the male cell with nucleus of the cell to form

3. When the opposite oscillating body covers the distance from (X) to (Y) in (0.2) sec. so, the amplitude = and its periodic time = sec.
4. If the angle between the incident light ray and the reflecting surface = 30° so the angle of incidence = and the angle between the incident ray and the reflected ray =



B Put (✓) or (✗) :

1. The velocity of sound waves in air is greater than the velocity of light wave. ()
2. The measuring unit of noise intensity is Decibel. ()
3. Photon energy = planck's constant \times wave length. ()
4. The typical flower contains four floral whorls. ()

C Mention a function of each following :

1. Glass prism.
2. Ultrasonic waves in industry.

Question 2

A Choose the correct answer :

1. The result of multiplying the frequency of an oscillating body by its periodic time equals
a. 0.5 b. 0.25 c. 1 d. $\frac{1}{3}$
2. Human ear can distinguish sounds of frequencies
a. 100 KHz b. 30 KHz c. 200 Hz d. 10 Hz
3. All of the following are parts of female reproductive system except
a. uterus. b. vas deference. c. ovary. d. fallopian tube.
4. The Absolute refractive index of any materials is always one.
a. more than b. equal to c. less than d. a part of

B Correct the underlined word :

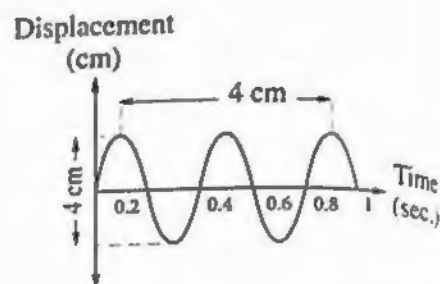
1. The distance between the first crest and the third crest of a wave is 20 cm so, the wave length of this wave is 20 cm.
2. If the distance between the sound source and ear is doubled the intensity of the sound increases to double.
3. Rainbow is phenomenon takes place on desert roads at noon especially in summer.
4. Growing prevents living organisms from extinction.

- C
1. Give reason for the petals of corolla are colorful and scented.
 2. What is meant by the absolute refractive index of water is 1.33 ?

Question 3

A Compare in a table between the mechanical waves and electromagnetic waves concerning definition, speed, type and example :

B From the opposite figure, choose the correct answer :



1. The wave length =

- a. 4 m b. 2 m
c. 2 cm d. 1 m

2. The frequency =

- a. 0.2 sec b. 0.4 Hz c. 2.5 Hz d. 0.2 Hz

3. The amplitude =

- a. 4 cm b. 4 m c. 2 cm d. 0.04 m

4. Velocity of wave is

- a. 5 cm/sec. b. 5 m/sec. c. 10 cm/sec. d. 10 m/sec.

C What happens when ... ?

1. The oscillating body passes its rest position during its movements. (Concerns its velocity).
2. A light ray falls perpendicular on reflecting surface.

Question 4

A Cross the odd word, then write the name of the others :

1. Sound wave – Light wave – Radio wave – Infrared wave.
2. Androecium – Calyx – Corolla – Root.
3. Pendulum motion – Spring motion – Rotatory bee motion – Stretched string motion.
4. Red – Orange – White – Violet.

B Write the scientific term :

1. The colour which has maximum deviation in spectrum colour in glass prism.
2. None audible waves whose frequencies are less than 20 Hz.
3. The property by which the human ear can distinguish between sounds from different sources even they are equal in intensity and pitch.
4. The reproduction of some plants by parts of the root, stem or leaves.

C A gear of savart's wheel rotating 80 cycle in a minute, if the frequency of the sound produced is 200 Hz, calculate the number of teeth of that gear.

5 Cairo Governorate

El Sayeda Khadija Official Language School

Answer the following questions :

Question 1

A Complete the following :

1. The measuring unit of noise intensity is, while is the measuring unit of sound intensity.
2. After fertilization, the ovary grows forming the, while the ovule is converted into
3. Light intensity is proportional to of the distance between the surface and the source.

B What is the importance of ... ?

1. Tissue culture.
2. Hot water in Jacuzzi.
3. Ultrasonic waves in the medical field.

C Savart's wheel rotates with a rate of 200 cycles per 2 minutes, a sound of frequency of 300 Hz is produced when an elastic plate touches the teeth of the gear, calculate the number of the teeth of the gear.

Question 2

A Write the scientific term of each of the following :

1. Short stem where leaves are developed and modified into reproductive organ.
2. The ability of the medium to refract light rays.
3. The disturbance that propagates and transfers energy in the direction of propagation.
4. The product of Planck's constant times the frequency of photon.

B What happens when ... ?

1. Increasing the density of the medium ? (related to the sound intensity).
2. Light ray travels from water to air ? (related to the angle of refraction).
3. Increasing the wavelength four times for the same velocity ?
(concerning the wave frequency).
4. The oscillatory body passes its rest position during its movement ?
(concerning its velocity).

C Calculate the speed of light through diamond given that the absolute refractive index of it = 2.4 and the speed of light through air = 3×10^8 m/sec.

Question 3**A** Choose the correct answer :

- The colour light in the spectrum colours has the highest deviation.
a. white b. red c. violet d. yellow
- Human ear can't distinguish the sound of frequency equals
a. 50 Hz b. 30 Hz c. 300 Hz d. 5 Hz
- When the incident light ray reflects on itself the angle of incidence equals
a. 90° b. 0° c. 120° d. 180°
- Sound of frequency 200 Hz is than the sound of frequency 100 Hz.
a. sharper b. stronger c. harsher d. weaker

B Compare between each of the following :

- Regular and irregular reflection. (direction of reflection rays).
- Mechanical waves and electromagnetic waves. (according to the medium of propagation).
- Pollination by air and pollination by insects. (one characteristics of flower).
- Transverse waves and longitudinal waves.
(according to the direction of vibration of medium particles).

C Calculate the wavelength for a visible light wave of frequency 6×10^{14} Hertz and velocity 3×10^8 m/s**Question 4****A** Correct the underlined words :

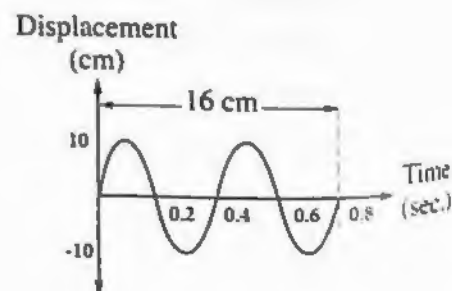
- The ovum consists of head, middle part and tail.
- The motion of rotary bee is considered as an oscillatory motion.
- Angle of incident greater than angle of reflection.
- Rainbow phenomenon takes place on desert roads at noon specially in summer.

B What is meant by ... ?

- Harmonic tones.
- Fertilization process in human.
- Wave velocity.

C From the opposite figure, calculate :

- The amplitude.
- Wavelength.
- The frequency.
- Periodic time.



6 Cairo Governorate**Al-Shrouk Educational Zone**

Answer the following questions :

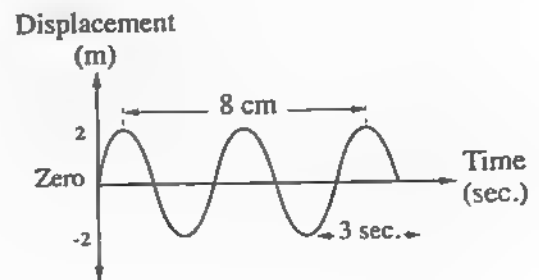
Question 1

A Complete the following sentences :

1. From the artificial vegetative in plant and
2. From natural phenomenon that are related to the reflection or refraction of light
3. The human ear can distinguished sound frequencies between and hertz.
4. Sound produced due to of bodies.
5. The distance covered by light in one second is
6. We use savart's wheel to determine
7. and are bisexual flowers.

B Study the opposite figure then calculate :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.

**Question 2**

A Choose the correct answer of the following :

1. Fertilization occurs when is formed.

a. embryo	b. zygote	c. ovum
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2. The light travels in lines.

a. straight	b. oval	c. circular
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3. Sound of frequency 200 is than sound of frequency 100 hz.

a. harsher	b. stronger	c. sharper
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4. The unit of measuring sound intensity is

a. m/sec	b. watt/m ²	c. desible
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B Mention one function for :

1. Calyx
2. Ultrasonic waves

C Give reasons for :

1. The motion of rotary bee is periodic motion not oscillatory motion.
2. Palm flowers are unisexual.

Question 3

A Write the scientific term :

1. The reproduction of some plants by root, stem, leaves.
2. A group of some colourful leaflet surrounding the flower.
3. Objects allow light to transfer through them.
4. The ability of medium to refract light rays.

B In the following figure :

1. Which represents the red colour, and which represents the violet colour.
2. Write one use for glass triangle prism.



C Mention one difference :

1. Male and female flower.
2. The mechanical and electromagnetic waves.

Question 4

A Write (✓) or (✗) :

1. The light ray refracted towards the normal when it travel from air to glass. ()
2. The sound intensity decrease when the area of vibrating surface decrease. ()
3. The angle of incidence of light rays = angle of reflection. ()
4. The amplitude measured in hertz. ()
5. The sound velocity through gases is faster than that through liquids. ()
6. Reproduction by tuber happen in orange. ()

B Write down the mathematical relation that join between each of the following :

1. Photon frequency and its energy.
2. The wave velocity in a medium and the refractive index for its material.

C What happens to ... ?

1. Incident light ray after falling on rough surface.
2. Ovary of flower after fertilization.

7

Giza Governorate

6th October Educational Zone

Answer the following questions :

Question 1

A Complete the following sentences :

1. A body makes 300 complete vibrations in one minute its frequency is
2. If the angle of reflection = 30, so angle of incidence =
3. Measuring unit of wavelength is
4. The frequency of infrasonic waves is Hz.

B Give one example for :

1. Oscillatory motion.
3. Translucent material.

2. Mechanical wave.

4. Electromagnetic wave.

C What happens when light ray fall perpendicular to a reflecting surface ?

Question 2

A Put (✓) or (✗) :

1. The jacuzzi is an application for wave motion. ()
2. Sound pitch is a property where ear can distinguish between weak and strong sounds. ()
3. The carpel of flower consists of filament and anther. ()
4. The red colour has the longest wave length. ()

B Cross out the odd word :

1. Air – Glass – Wood – Water.
2. Calyx – Corolla – Stamen – Testes.
3. Red – Orange – Black – Violet.
4. Ovary – Uterus – Vagina – Prostate gland.

C Write the function for each Savart's Wheel.

Question 3

A Write scientific term :

1. The change in light path when travel between two transparent medium differ in optical density.
2. Natural phenomenon that takes place on desert roads at summer noon times.
3. Tones are higher in pitch and lower in intensity.
4. It is the fusion of the nucleus of male cell with the female cell to form zygote in flower.

B Correct the underlined word :

1. The speed of sound is more than that of light.
2. The male sex hormone is estrogen.
3. The green leaves in flower called corolla.
4. The light travel in curved line.

C Sound wave of frequency 200 hertz wave length in air 1.7 m. Calculates the velocity of sound wave in air.

Question 4**A** Choose the correct answer :

- The unit of measuring the noise intensity is
a. decibel. b. meter. c. gram. d. hertz.
- Sound waves which are used in medical field is
a. sonic. b. infrasonic. c. ultrasonic. d. intensity.
- The complete oscillation has amplitudes.
a. 8 b. 12 c. 1 d. 4
- The male cell in flower is
a. ovum. b. pollen grain. c. sperm. d. stigma.

B Write the measuring unit for :

- Periodic time.
- Wave velocity.
- Amplitude.
- Sound intensity.

C Give reason for : the refractive index of any transparent medium is always more than one.**8****Giza Governorate**

Experimental Language School Directorate

Answer the following questions :

Question 1**A** Complete the following sentences :

- The complete oscillation includes displacements, each is called
- The transverse wave consists of and
- The glass prism is used to separate the light into colours.
- After fertilization in plants, ovule changes into but ovary converts into

B Correct underlined words :

- As the frequency decreases periodic time decreases.
- Reproduction by tubers can be used in apples and pears.
- The ovum consists of head, middle part and tail.
- Progestrone hormone is responsible for male secondary sex characters.

C Problem :

Savart's wheel rotates with a rate 120 cycle per minute, a sound of frequency 100 Hz is produced when an elastic plate touches teeth of a gear, Calculate the number of teeth of this gear.

Question 2

A Write the scientific term :

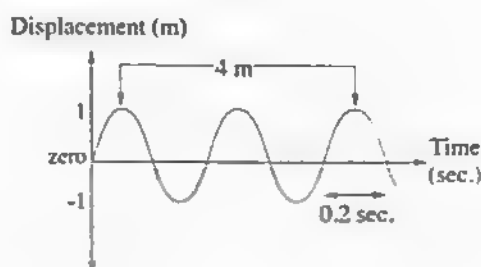
1. The motion which is regularly repeated in equal periods of time.
2. The ratio between velocity of light in air to its velocity in another transparent medium.
3. It is the returning back of light ray in the same medium on meeting a reflecting surfaces.
4. A short stem whose leaves are modified to form sexual reproductive organs in plant.

B Give an example for :

1. A mechanical transverse wave.
2. A transparent material.
3. A factor affecting sound intensity with direct relation.
4. An artificial pollinated plant.

C Look at the opposite figure then calculate :

1. Frequency.
2. Wave velocity.



Question 3

A Choose the correct answer :

1. The periodic time of a source that makes 60 oscillations/minute =
 a. 6 sec. b. 1 sec. c. 0.1 sec. d. 10 sec.
2. Doctors use waves of frequency to break down kidney stones.
 a. 30 Hz. b. 21 KHz. c. 20 Hz. d. 20 KHz.
3. Pollination in coloured flowers takes place by
 a. insects. b. man. c. water. d. air.
4. All of the following are parts of female reproductive system except
 a. uterus. b. ovary. c. fallopian tube. d. vas deferens.

B Write one difference between :

1. Transverse wave and longitudinal wave. (according to particles vibration direction).
2. Sound and light. (according to their velocity).
3. Fundamental and harmonic tones. (according to their frequency).
4. Male flower and female flower. (according to the symbol).

C What happens when the oscillating body passes through its rest position. (regarding to its velocity) ?

Question 4

A Put (✓) or (✗) and correct the wrong :

1. Motion of rotary bee is an example of oscillatory motion. ()
2. Sound travels in space. ()
3. Energy of red photon is less than that of violet photon. ()
4. Calyx consists of green leaves called petals. ()

B Choose the odd word out :

1. Glass – Water – Air – Wood.
2. White – Yellow – Green – Blue.
3. Violin – Drill – Piano – Reed pipe.
4. Density of the medium – Surface area – Wind direction – Frequency.

C Give a reason for : the light ray that falls perpendicular on a mirror reflects on itself.

9

Giza Governorate

Abou El Nomros Educational Zone

Answer the following questions :

Question 1

A Complete the following sentences :

1. Radio waves are from waves that can travel through
2. There are two types of reproduction in plants which are and
3. The frequency of sonic waves ranges between Hz and Hz.
4. The complete oscillation consists of successive maximum displacement. Each of them is called

B Cross out the odd word :

1. Sepals – Petals – Root – Carpels.
2. Motion of swing – Tuning fork – Pendulum – Rotary bee.
3. Ovary – Testis – Fallopian tube – Vagina.
4. Androecium – Anther – Stamen – Ovary.

C Calculate the frequency of a musical tone similar to the tone produced from savart's wheel rotating with a velocity of 960 cycles in 120 seconds, knowing that the number of gear teeth is 30 teeth.

Question 2

Choose the correct answer :

- The angle of incidence of light is the angle of reflection.
a. larger than b. smaller than c. equals to d. double
- The measuring unit of periodic time is
a. Hz b. second c. watt/m² d. m/s²
- produces pollen grains.
a. Carpel b. Style c. Anther d. Petal
- Male puberty features are related to the effect of hormones.
a. thyroxin b. testosterone c. estrogen d. progesterone

Give reasons for :

- Sound waves are mechanical waves.
- The sperm has a long and thin tail.
- Using ultrasonic waves in milk sterilization.
- Aluminium foil is an opaque medium.

What's meant by wave velocity ?

Question 3

Put (✓) or (✗) in front of the following statements :

- The simple harmonic motion is considered the simplest form of oscillatory motion ()
- Palm trees are pollinated by insects. ()
- The pen seems broken in a cup of water due to the light refraction. ()
- The temperature of testes is 4°C above the normal body temperature. ()

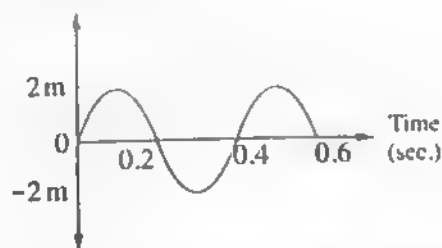
Give one example for each of the following :

- A transverse wave :
- A tuber :
- A high pitched sound :
- A transparent medium :

From the opposite figure, choose the correct answer :

- The periodic time =
(0.2 sec. - 0.4 sec. - 2 sec. - 4 sec.)
- The amplitude =
(0.2 cm. - 0.4 cm. - 2 cm. - 4 cm.)

Displacement (m)



Question 4

A Choose from column (B) what suits it in column (A) in the following tables :

(A)	(B)
1. The translucent medium	a. is the disturbance that propagates and transfers energy in the direction of propagation.
2. The zygote	b. is the property of sound by which the ear can distinguish between strong and weak sounds.
3. The sound intensity	c. is the cell resulting from the fusion of pollen grain and an ovum nuclei.
4. The wave	d. is the medium which permits some light to pass through.

B Write the scientific term of each of the following :

1. The external factor which affects the ear causing the sense of hearing.
2. The measuring unit of noise intensity.
3. The phenomenon that appears in the desert as result of reflection and refraction of light on the desert roads at noon.
4. A tool used in the analysis of light.

C What happens when a light ray falls perpendicular on a reflecting surface ?

10

Giza Governorate

Science Inspectorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The hormone in male and hormone in female are responsible for the appearance of secondary sex characters.
2. The reflection is classified into two types which are and
3. The calyx is a group of leaves, each leaf is called
4. The frequency of 540 oscillations in a minute is and periodic time is

B Put (✓) or (✗) :

1. Vegetative reproduction is sexual reproduction. ()
2. The amplitude is the reciprocal of the periodic time. ()
3. The light ray refracts towards the normal line when it travels from air to glass. ()
4. The flint glass is considered as an opaque medium. ()

1. If the distance between first and fourth crest is 15 meter, calculate :

1. The wavelength.
2. Wave velocity when frequency = 100 Hz.

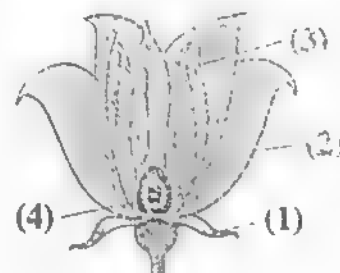
Question 2

1. Choose the correct answer :

1. It is the highest point of the particles of the medium in the transverse wave is
a. the crest. b. the compression. c. the rarefaction. d. the trough.
2. The right ovary in the human female produces a mature ovum every days.
a. 24 b. 28 c. 34 d. 56
3. Sound waves are waves.
a. mechanical longitudinal b. electromagnetic longitudinal
c. longitudinal d. transverse
4. The absolute refractive index of any material is always one.
a. more than b. less than c. equal to d. (a) and (b)
5. All of the following are electromagnetic waves except waves.
a. light b. sound c. x-rays d. radio
6. The result of multiplying the frequency by periodic time equals
a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. $\frac{3}{4}$ d. 1
7. The wave transfers in the direction of propagation.
a. molecules b. energy c. matter d. force
8. After fertilization, the ovary develops forming the
a. seed b. flower c. fruit d. leaf

2. Study the opposite figure then answer :

1. Label the figure.
2. The sex of this flower is and the function of number (3) is



3. Give reasons for :

1. We see lightning before hearing thunder.
2. The ultrasonic waves have medical uses.
3. The light ray refracts when passes through glass.

Question 3

1. Write the scientific term of each of the following :

1. A physical quantity equals the multiplication of plank's constant and frequency.
2. A new method of producing large numbers of plants from a small part of it.

PART 3

3. A phenomenon that appears in the desert due to refraction and reflection of light.
4. Transferring pollen grains from the anther of flower to stigma of the same flower.
5. The motion which is regularly repeated in equal periods of time.
6. The number of waves produced from the source in one second.
7. The fusion of the male cell with the female ovum.
8. Process takes place in female every 28 days.

B Cross out the odd word :

1. Glass – Ceramic – Water – Air.
2. Yellow – Blue – White – Violet.(lights).
3. Spring – Tuning fork – Simple pendulum – Rotary bee.
4. Stigma – Stamen – Style – Ovary.

C What will happen if ... ?

1. Increasing the velocity of the pendulum [concerning kinetic energy].
2. Sound wave travels from air to water [concerning its velocity].

Question 4

A Correct the underlined words :

1. The angle of incidence greater than the angle of reflection.
2. The human skin is considered as a translucent medium.
3. The sharp sounds have low frequency.
4. Light travels in curved lines.
5. The motion of tuning fork is a wave motion.
6. Transverse wave consists of compressions and rarefactions.
7. The male gamet contains quarter of the genetic material.
8. The estrogen hormon responsible for pregnancy continuity.

B Mention :

1. The measuring unit of the sound intensity.
2. The measuring unit of the noise intensity.
3. The function of ear plugs.
4. The function of triangular glass prism.

C Calculate the absolute refractive index of diamond if light speed in it = 1.25×10^8 m/sec and the light speed in air = 3×10^8 m/sec.

11 Alexandria Governorate

Science Inquiries

Answer the following questions :

Question 1

A Cross out the odd word then mention the scientific term of the rest :

1. Pendulum motion – Spring motion – Rotary bee motion – Stretched string motion.
2. Sound waves – Light waves – Infrared waves – Radio waves.
3. Anther – Filament – Pollen grains – Style.
4. Vase deference – Ovary – Uterus – Fallopian tubes.

B Complete the following statements :

1. The measuring unit of sound intensity is
2. As the medium density increases, the sound intensity
3. Infrasonic waves are sound waves of frequencies less than Hz.
4. Flowers that have feather like stigmas are pollinated by

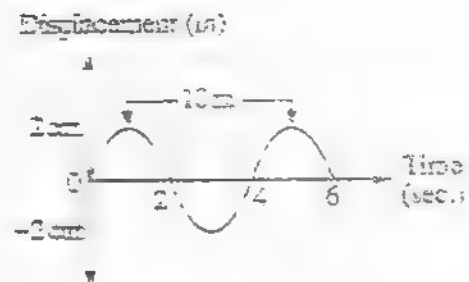
C Compare between the following :

Regular reflection and irregular reflection (concerning the texture of reflecting surface and the direction of reflected rays).

Question 2

A From the opposite figure find :

1. Amplitude.
2. Periodic time.
3. Frequency.
4. Wavelength.



B Write the scientific term of each of the following :

1. The point of highest density and pressure in longitudinal wave.
2. A property by which the human ear can distinguish between harsh and sharp voice.
3. The colour with maximum deviation in spectrum colours.
4. The resulting cell of the fusion of the pollen grain nucleus with the egg nucleus.

C What is the result of the following case ... ?

The vibration of the particles of a medium perpendicular to the direction of wave propagation.

Question 3

A Choose the correct answer :

1. One amplitude equals of a complete oscillation.

a. $\frac{1}{2}$

b. $\frac{1}{3}$

c. $\frac{1}{4}$

d. $\frac{1}{8}$

2. When light ray passes from air to glass it refracts the normal.
a. away from b. near to c. perpendicular to d. along
3. The sound velocity is maximum in
a. vacuum. b. gases. c. liquids. d. solids.
4. A new method to produce large numbers of plants to form a small part of it is called
a. tissue culture. b. grafting. c. cutting. d. bulbs.

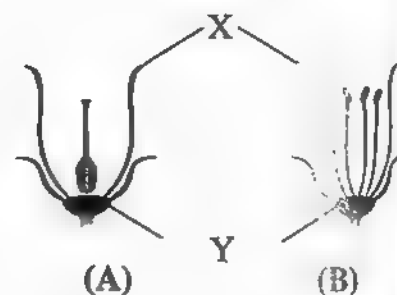
B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Ultrasonic waves	a. is used in the analysis of light.
2. Jacuzzi	b. produce the sperms and the testosterone hormone.
3. Triangular prism	c. treats sprains and cramps with hot water and nervous tension by cold water.
4. Testes	d. break down stones of kidney and ureter or diagnose tumors.

- C** Savart's wheel rotates with a rate of 600 cycles per minute, A sound of frequency 1200 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of teeth gear.

Question **4**

- A** The opposite figure shows two flowers of two plants from the same species then complete the following statements :



1. The name of part (X) is and (Y) is
2. The function of part (X) is and (Y) is
3. The sex of flower (A) while in flower (B)
4. The ovary after fertilization in plant changes into

B Correct the underlined words :

1. The relation between frequency and wavelength is constant relation.
2. The light travels in curved lines.
3. The absolute refractive index of any material is always smaller than one.
4. Olive fruit is multi seed fruit.

- C** Give a reason for : on doubling the distance between the light source and the surface the light intensity decreases.

12 Alexandria Governorate**Al-Montazah Educational Zone**

Answer the following questions :

Question 1

A Choose the correct answer :

- The periodic time of a tuning fork that makes 240 waves in one minute equal
 a. 1 sec. b. 4 sec. c. 0.5 sec. d. 0.25 sec.
- All the following are electromagnetic waves except waves.
 a. light b. radio c. water d. infrared
- Pollen grains are formed inside the of the flower.
 a. ovary b. calyx c. anther d. gynoecium
- One amplitude equal of a complete oscillation.
 a. $\frac{1}{4}$ b. $\frac{1}{3}$ c. $\frac{1}{2}$ d. $\frac{1}{8}$
- Sound velocity is maximum in
 a. vacuum. b. gases. c. liquids. d. solids.
- The media don't allow light to pass.
 a. transparent b. translucent c. opaque d. no correct answer

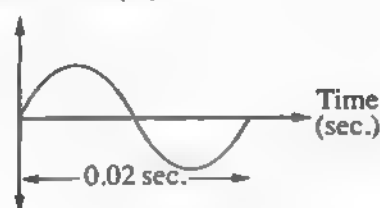
B Mention one difference between :

- Regular reflection and irregular reflection.
- Sperm and ovum.

C From the opposite figure find :

- The periodic time =
- The frequency =

Displacement (m)

**Question 2**

A Write the scientific term :

- The ability of the medium to refract the light.
- The flower that contains the four whorls.
- Changing the path of light when it travels between two transparent media.
- Property of sound by which the ear can distinguish between the sharp and rough sound.
- The angle lies between the incident light ray and the normal line at the point of incidence on the reflection surface.
- The highest point of medium particles in transverse waves.

B What's meant by ... ?

1. The absolute refractive index of glass = 1.5
2. The frequency of the tuning fork = 300 HZ
3. Sound intensity.

C Mention the first law of light reflection.

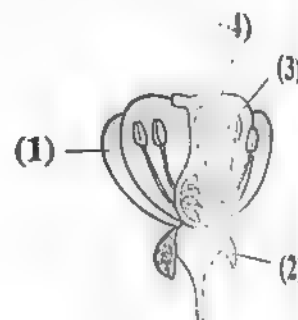
Question 3

A Complete the following :

1. Sound waves travel through the air as pulses of and
2. The measuring unit of noise intensity is while the measuring unit of sound intensity at a point is
3. Gynoecium is the reproductive organ of the flower while the androecium is the reproductive organ.
4. White light consists of a mixture of colours which are known colours.
5. The two testes locate the body in a structure called

B Label the drawing :

1.
2.
3.
4.



Question 4

A Put (✓) or (x) :

1. The movement of the clock pendulum is an example of wave motion. ()
2. The velocity of sound in the air is greater than the light velocity. ()
3. The wave length of transverse waves distance between two successive crests or troughs. ()
4. When the light ray falls perpendicular to a mirror its angle of reflection = zero. ()
5. Smoking and addiction decrease the formation of male sex hormones. ()

B Mention one use :

1. Ultrasonic waves.
2. Triangular prism.

C Give reasons for :

1. The petal of corolla are coloured and scented.
2. Sound can be heard from all directions.

13 Alexandria Governorate**Borg Al-Arab Educational Zone**

Answer the following questions :

Question 1

A Write the scientific term :

1. The distance covered by the wave in one second.
2. The flower which contains androecium and gynoecium.
3. The motion of an oscillating body when it passes by a fixed point on its two successive times in the same direction.
4. The ability of the medium to refract the light ray.

B Correct the underlined words :

1. Each stamen consists of stigma, style and ovary.
2. The estrogen hormone is responsible for pregnancy to continue.
3. The ovum of the human male contains half the genetic material.
4. The oscillatory motion is the motion that is repeated regularly in equal periods of time.

C Savarts wheel rotates with the rate 300 cycles per minute. a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear, Calculate the number of teeth of the gear.

Question 2

A Choose the correct answer :

1. The result of multiplying the frequency by its periodic time equals
a. 0.5 b. 0.01 c. 1 d. 0.1
2. The energy of the green photon is the energy of yellow photon.
a. greater than b. equal to
c. less than d. there is no correct answer
3. produces pollen grain.
a. Carpel b. Style c. Stamen d. Petal
4. The right ovary in the female human produces a mature (ripe) ovum every days.
a. 24 b. 28 c. 34 d. 56

B Cross out the odd word, then express the relation among the remaining words :

1. Sound wave – Light wave – Radio wave – Infrared wave.
2. Light travels in straight lines – The speed of light differ in different media – White light consists of seven spectrum colors – Light travels through materialistic media only.
3. Amplitude of vibration – Medium density – Frequency – Wind direction.
4. Cutting – Pollination – Tissue culture – Grafting.

- C** Calculate the number of complete oscillation that are made by a body in 5 minutes if its frequency is 6 Hz.

Question **3**

- A** Complete each of the following sentences :

1. In transverse wave the particles of the medium vibrate the direction of wave propagation.
2. Absolute refractive index is the ratio between to
3. The measuring unit of the quantity of sound intensity is while that of the noise intensity is
4. The corolla attracts to the flower, which help in process.

- B** Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The sound pitch	a. is the characteristic, by which the ear can differentiate between sounds as strong or weak.
2. The quality of sound	b. is the property, by which the ear can distinguish between sharp and rough sounds.
3. The sound intensity	c. is the number of the complete vibrations in one second.
	d. is the characteristic, by which the ear can distinguish between sounds from different sources even if they are equal in intensity and pitch.

- C** Give reasons for :

1. Sound intensity in case of presence of carbon dioxide gas as a medium is higher than the air.
2. The light ray that falls perpendicular on a glistening surface reflects on itself.

Question **4**

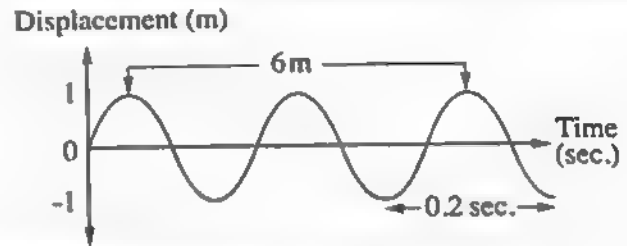
- A** Put (✓) or (x) :

1. The complete oscillation includes four successive amplitudes. ()
2. The fish is seen higher than its real position in the fish tank. ()
3. Reproduction by tuber happens in orange and bitter orange. ()
4. The sperm secretes hormone to dissolve the cellular membrane of the ovum. ()

- B** Mention one function for each of the following :

1. Jacuzzi.
2. Ultrasonic wave.
3. Testes.
4. Glass prism.

- C** In the opposite figure calculate :
Wave velocity.



14 Qalyoubia Governorate

Qalyoub Educational Zone

Answer the following questions :

Question 1

- A** Write the scientific term :

1. The number of complete oscillations produced by the oscillating body in one second.
2. A property by which the ear can distinguish between harsh and sharp voices.
3. The quantity of light falling perpendicular to a unit area of a surface in one second.
4. A short stem whose leaves are modified to form the reproductive organs in the plants.
5. A process of multiplying a small part of a plant to get many identical parts.
6. The direction through which the wave propagates.

- B** What happens if ... ?

1. The frequency of a wave is doubled in its wavelength [when the wave velocity is constant]
2. A pollen grain falls on the stigma of a flower.
3. Incident light rays fall on a rough surface.

- C** Sound waves of frequency 200 Hz, and wavelength in air 1.7 metre.
Calculate the velocity of sound wave propagation in air.

Question 2

- A** Complete the following sentences :

1. The crest in wave is equivalent to in longitudinal wave.
2. Sound intensity at a point is proportional to the of the distance between this point and the source of sound.
3. Radio waves are considered as waves, which propagate through free space with a velocity of
4. Sexual reproduction in the flowering plants takes place in two successive processes which are and
5. If the angle of incidence is more than the angle of refraction, this means that the light ray travels from a medium of optical density to another of optical density.
6. The hormone in males and hormone in females are responsible for the appearance of secondary sex characters.

B Give reasons for :

1. The ultrasonic waves are used in milk sterilization.
2. The energy of red light photon is less than that of orange light photon.
3. The pollination of maize plant is mixed pollination.

C Calculate the absolute refractive index of diamond if the light speed through it is 1.25×10^8 m/sec. [knowing that the light velocity through air is 3×10^8 m/sec.]

Question 3

A Choose the correct answer :

1. The product of multiplying the frequency of an oscillating body by its periodic time equals
a. variable value. b. negative value. c. constant value. d. one.
2. The human ear can distinguish sounds of frequency
a. 50 KHz. b. 30 KHz. c. 300 Hz. d. 5 Hz.
3. Androecium is consists of group of
a. pistils. b. stamens. c. stigma. d. sepals.
4. The right ovary in the human female produces a mature ovum each days
a. 24 b. 28 c. 34 d. 56
5. Jacuzzi is a tub of physiotherapy where water moves in the form of waves.
a. oval b. circular c. transverse d. longitudinal
6. By increasing the thickness of the transparent medium, the quantity of light that passes through it
a. decreases. b. increases. c. remains constant. d. doubled.

B Compare between each of the following :

1. The sound waves and light waves. (related to the propagation and the type of wave).
2. The ovum and the sperm. (related to the size and the mobility).

C Savart's wheel rotates with a rate of 300 cycles/minute. If the frequency of the sound produced is 600 Hz when an elastic plate touches the teeth of the gear. Calculate the number of teeth of the gear.

Question 4

A Mention the function of each of the following :

1. Progesterone hormone.
2. Calyx of the flower.
3. The midpiece in sperm.
4. The ear plugs in factories.

B Cross out the odd word, and write the relation between the rest of the words :

1. Sound wave – Light wave – Radio wave – Infrared wave.
2. Yellow – Blue – White – Violet – Red.
3. Air – Pure water – Milk – Glass.
4. Uterus – Vagina – Epididymis – Two ovaries – Two fallopian tubes.

C Mention the mathematical relation between each of the following :

1. Frequency and number of complete oscillations made by an oscillating body at a certain time.
2. The first law of light reflection.

15 El-Sharkia Governorate

Al-Shaheed Sheriff Talat School

Answer the following questions :

Question 1

A Complete the following sentences :

1. Sound pitch is a property by which the ear can distinguish between and
2. The crest in the wave is equivalent to the in longitudinal wave.
3. After fertilization, the ovary grows forming the , while the ovule is converted into
4. Oscillatory motion and motion are from motion.

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Calyx	a. Carpel.
2. Frequency	b. Sepals.
3. Androecium	c. Hertz.
4. Gynoecium	d. Stamen.
	e. m/sec. .

C Savart's wheel rotates with a rate of 300 cycles per one minute, a sound of 600 Hz is produced, when an elastic plate touches the teeth of the gear. Calculate the number of the teeth of the gear.

Question 2

A Put (✓) or (✗), then correct the wrong one :

1. The typical flower contains 4 whorls. ()
2. Drill is an example of musical tone. ()

3. The movement of clock pendulum is an example for wave motion. ()

4. Reproduction by tuber happens in orange. ()

B Cross out the odd words :

1. Red – Orane – White – Violet.

2. Sound wave – Light wave – Radio wave – Infrared wave.

3. Milk – Cotton – Air – Human skin.

4. Ovary – Epididymis – Uterus – Vagina.

C Give a reason for the following :

We see lightning before hearing thunder.

Question 3

A Write the scientific term :

1. The transfer of pollen grain from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

2. A natural phenomenon that appears in the desert in summer at noon as a result of light reflection and refraction.

3. The group of flowers that carried on the same axle.

4. An area in the longitudinal wave at which the medium particles are of the lowest density.

B Give one example for :

1. Translucent medium.

2. Factors affecting the sound intensity.

3. Oscillatory motion.

4. Artificial vegetative reproduction.

C What's happens if ... ?

The frequency of an oscillating body increases (concerning the periodic time).

Question 4

A Choose the correct answer :

1. The human ear can distinguish sound of frequency

a. 5 KHz.

b. 30 KHz.

c. 300 KHz.

d. 50 KHz.

2. Pollen grains are formed inside the of the flower.

a. carpel

b. anther

c. ovary

d. calyx

3. The measuring unit of noise intensity is

a. watt/m².

b. Hz.

c. decibel.

d. m/sec.

4. The periodic time of a tuning fork which makes 240 waves in one minute = sec.

a. 1

b. 4

c. 0.5

d. 0.25

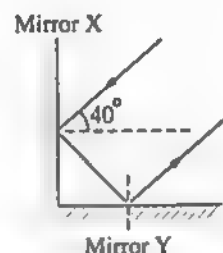
B Correct the underlined words :

1. The produced tone from a tuning fork is called complicated tone.
2. White light travels in curved line.
3. Sonic waves are used in sterilization of milk.
4. The absolute refractive index of any material is always equal one.

C According to the opposite figure :

The angle of the reflection of rays on mirror

Y =

**16 Monofia Governorate**

Shebeen El-Koum Educational Zone

Answer the following questions :

Question 1**A Complete the following sentences :**

1. A simple pendulum makes 120 complete oscillations in 2 seconds, so its frequency is Hz and its periodic time is sec.
2. Wave frequency is proportional to periodic time, while wavelength is proportional to wave velocity.
3. The urine is liquid, while seminal fluid is liquid to keep the sperms alive.
4. The energy of a photon is proportional to the of the photon.

B Write the scientific term of each of the following :

1. Glands that secrete the seminal fluid.
2. The swollen part upon the flower pedicle on which the floral leaves are existed.
3. The organ that responsible for the formation of the fetus.
4. The distance between two points, the velocity of the oscillating body at one point reaches its maximum value and at the other point is zero.

C If the number of teeth of a gear in a Savart's wheel is (40) teeth that rotates by (360) cycles per minute to produce a sound tone its wave length 1.4 meters calculate the speed of the produced wave.**Question 2****A Give reasons for :**

1. The fish in water seems at a position higher than its real position.
2. The motion of swing is considered a simple harmonic motion.
3. A peach fruit contains a single seed, while a pea fruit contains many seeds.
4. Sperms secrete enzymes during the penetration of the ovum.

B Cross out the odd word :

1. Sepals – Petals – Tubers – Carpals.
2. Pendulum motion – Spring motion – Rotary bee motion – Stretched string motion.
3. Penis – Ovary – Uterus – Fallopian tubes.
4. Sound intensity – Sound velocity – Sound pitch – Sound quality (type).

C Two waves of the same type and spread in one medium, if their frequencies are (512), (256) Hz. respectively. Find the ratio between their wavelengths.

Question 3

A Put (✓) or (✗) :

1. Nanometer is the measuring unit of the wavelength that equals 1×10^6 meters. ()
2. Transparent medium is that permits only a part of light to pass through it, as flint glass. ()
3. Sperms are stored in Cowper's gland. ()
4. Flowers pollinated by air have feather like stigmas. ()

B Mention the importance of each of the following :

1. A glass traingular prism.
2. Testosterone hormone.
3. Savart's wheel.
4. The wave.

C What is meant by the time taken by the oscillating body to make 30 complete oscillations is 10 seconds ?

Question 4

A Choose the correct answer :

1. When a light ray travels from air to water with an angle of incidence = 40° , then the angle of refraction in water is
 a. 30° b. 40° c. Zero° d. 50°
2. waves are used in several medical fields.
 a. Sonic b. Infrasonic
 c. Ultrasonic d. Sonic and ultrasonic
3. The ratio between the time of amplitude to the periodic time equals
 a. (1 : 1). b. (2 : 1). c. (1 : 4). d. (3 : 1).
4. The small-sized sperm participate with the large-sized ovum to form the genetic material in a ratio of
 a. (1 : 2). b. (1 : 1). c. (2 : 1). d. (1 : 4).

11 What happens when ... ?

1. Increase thickness of transparent medium.
2. You look vertically at a coin in a glass of water.
3. The area of a hole through which the light passes over a barrier increases.
4. Viruses are exposed to ultrasonic waves.

C Calculate the absolute refractive index of diamond given that the speed of light through it is 1.25×10^8 m/s. (Knowing that the velocity of light through air is 3×10^8 m/s.)**17 Gharbia Governorate****Science Inspectorate**

Answer the following questions :

Question 1**A Complete the following sentences :**

1. When an oscillating body makes 600 complete cycles per minute, its frequency equals
2. sound waves accompany the blowing of storms that preceding rainfall.
3. Transverse wave consists of and
4. Types of pollination are pollination and pollination.

B Correct the underlined words :

1. 1 Gigahertz = 10^9 kilohertz.
2. The ovary of beans fruits contains one ovule.
3. The left ovary release one ripe ovum every 28 days.
4. The fertilized ovum contains the half number of chromosome.

C Calculate the velocity of light through glass if you know that the absolute refractive index of glass is 1.5**Question 2****A Write the scientific term of each of the following :**

1. A process of multiplying a small part of a plant to get many identical parts.
2. The measuring unit of sound intensity.
3. Half of the vertical distance between the crest and the trough of the wave.
4. The period between fertilization and delivery.

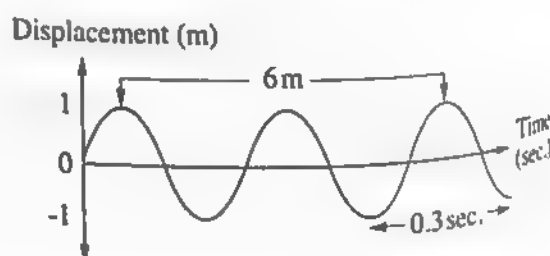
1. Stigma – Filament – Ovary – Style.
2. Reed pipe – Violin – Piano – Drill.
3. Tuning fork – Pendulum – Spring – Rotary bee.
4. 10 Hz – 20 Hz – 20 KHz – 50 Hz.

- ### Question 3

1. The anthers of air pollinated flowers are feathery like and sticky. ()
2. The light ray refracts near the normal when it travels from glass to air. ()
3. Syphilis disease is caused by spiral bacteria. ()
4. If the periodic time of an oscillating body is 0.2 seconds, so the time taken to do 5 complete oscillations is 1 sec. ()

- When the distance between the light source and a certain surface is doubled, the light intensity on the surface
 - decrease to quarter
 - increase four times
 - is doubled
 - remains constant
- The temperature of the two testes must be the normal body temperature.
 - two degrees above
 - two degrees below
 - the same
 - higher than
- Sounds of the different musical instruments can be differentiated from each other by
 - frequency.
 - harmonic tones.
 - fundamental tone.
 - sound intensity.
- The difference between the result of multiplying of frequency of an oscillating body by its periodic time and the whole the number one
 - $\frac{1}{2}$
 - $\frac{1}{4}$
 - 1
 - Zero

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave Velocity.

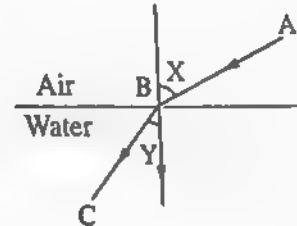


Question 4**A** Mention one use or function of :

1. Jacuzzi.
2. Savart's wheel.
3. Triangular glass prism.
4. Testes.

B From the opposite figure, complete the following sentences :

1. The ray (AB) represents
2. The ray (BC) represents
3. Angle (X) is
4. Angle (Y) is

**C** What happens when ... ?

1. You put a vibrating tuning fork on a resonance box. (concerning the sound intensity).
2. You look at a pencil partially immersed in water.

18 Dakahlia Governorate**East Mansoura Educational Zone**

Answer the following questions :

Question 1**A** Complete the following sentences :

1. Waves are classified according to the ability to propagate and transfer energy into and waves.
2. If time of one complete oscillation is 2 sec. so time of amplitude equal and frequency equal megahertz.
3. is the ability of the transparent medium to refract light and it differs from one medium to another according to in it.
4. The hormone in male and hormone in females are responsible for the appearance of secondary sexual characters.

B Choose the correct answer :

1. From the opposite figure velocity equals

- a. 1 m/sec.
- b. 3 m/sec.
- c. 4 m/sec.
- d. 10 m/sec.

2. Fertilization occurs when is formed.

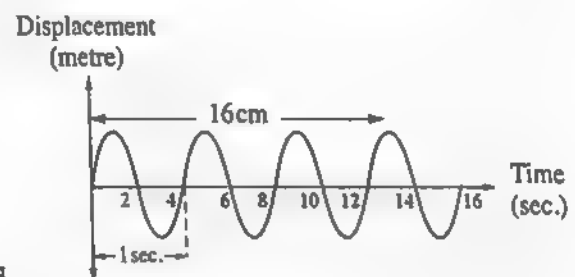
- a. embryo
- b. zygote
- c. endometrium
- d. ovum

3. In the flowers which have hanged anthers, pollination occurs by

- a. man.
- b. water.
- c. air.
- d. insects.

4. An organ in the flower, which consists of ovary, style and stigma is

- a. androecium.
- b. corolla.
- c. carpel.
- d. stamen.



PART 3

C

Gear	The first	The second	The third
Number of teeth	50	90	150

1. The sharpest sound is produced when the metal plate touches the gear.
2. Which gear produces sound its frequency 300 Hz when the metal plate touch it and rotates by a rate of 200 cycles/min show by mathematical calculation ?

Question 2

A Write the scientific term of each of the following :

1. Disturbance in which the particles of the medium vibrate along the direction of wave propagation.
2. The swollen part upon the flower pedicle on which the floral leaves are existed.
3. The tone produced from a violin or a piano.
4. A new method to produce large number of plants from a small part of it.

B Correct the underlined words :

1. If the distance between the second crest and sixth crest is 20 cm , so the wave length of this wave 10 cm.
2. The absolute refractive index of a glass equal to one.
3. When a beam of light falls inclined from air to water, the angle of incidence equal to angle of refraction.
4. The tail contains mitochondria which are responsible for energy production needed for the sperm movement.

C From the opposite figure :

Calculate the number of complete oscillation in 100 sec.



Question 3

A Cross out the odd word, then write the scientific term of the rest :

1. Tuning fork – Stretched string – Rotary bee – Pendulum.
2. Frequency – Wavelength – Velocity – Displacement.
3. Tubers – Grafting – Bulbs – Rhizomes.
4. Softness of voice – Growth of bones – Growth hair in mustache – Enlargement of muscles.

B Put (✓) or (✗) :

1. Velocity of sound through solids is more than that in liquid and velocity of sound in liquids is more than that in air. ()
2. The voice of woman is low pitched while the voice of man is high pitched. ()
3. As optical density of the medium increases, the speed of light through it increases. ()
4. The reproduction by grafting is used between orange and peaches. ()

C What is meant by the amplitude ?

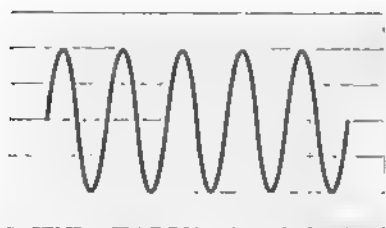
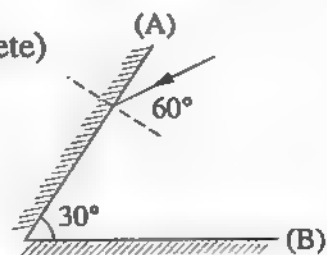
Question 4

A Find the mistakes in the following sentences. Then correct them by copying the whole correct sentence in your answer sheet :

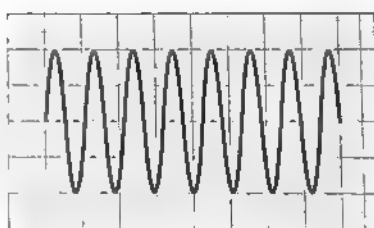
1. If the frequency of an oscillating body is 100 Hz the periodic time is 10 sec.
2. By increasing the length of the string the sound becomes sharp.
3. Sonic waves are used in discovery of landmines.
4. The wall of the ovule develops to become pericarp and the ovary develops to become a seed.

B Answer according to that in the brackets :

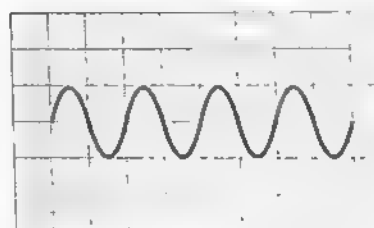
1. Red – Violet – Yellow – Green – Blue. (Arrange in descending order according to their energy).
2. The energy of light waves is composed of energy quanta known as photons. (Who the scientist).
3. Angle of reflection of the ray on mirror B equal (complete)
4. Using the following figures
(arrange the waves in ascending order according to their pitch).



(A)



(B)



(C)

C What is the scientific basis which the following depends on ... ?

The strings of musical instruments are fixed on a hollow wooden box.

19 Ismailia Governorate

Science Inspectorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The crest in the wave is equivalent to the in the longitudinal wave.
2. The measuring unit of the sound intensity is , while that of noise intensity is

3. In plant after fertilization, the ovule converts into the , while the ovary grows forming the

4. The complete oscillation includes successive displacements each one is called

B Cross out the odd word, then mention the common property between the rest :

1. Stigma – Stamen – Style – Ovary.
2. Sound wave – Light wave – Infrared wave – Radio wave.
3. Fallopian tube – The uterus – Vas deferens – The vagina.
4. Cutting – Grafting – Pollination – Tissue culture.

C Find the value of the angle of reflection in each of the opposite figure :



Fig. 1

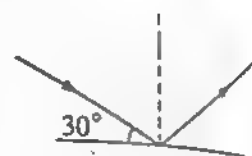


Fig. 2

Question **2**

A Choose the correct answer :

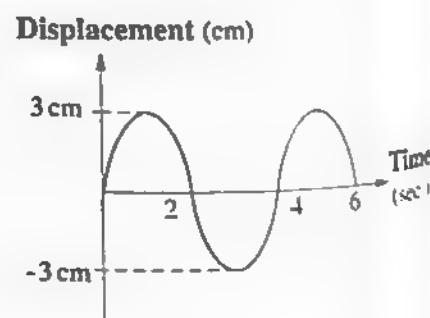
1. The quantum of energy of green light is the quantum of energy of yellow light.
a. greater than b. equal c. less than d. half
2. The potato tuber is a
a. stem. b. root. c. leaf. d. bud.
3. If the periodic time of a tuning fork is 4 sec., So the frequency is
a. 4 Hz. b. 6 Hz. c. $\frac{1}{4}$ Hz. d. $\frac{1}{6}$ Hz
4. The right ovary in the human female, produces a mature ovum every days.
a. 24 b. 28 c. 34 d. 56

B Mention one function of each of the following :

1. Calyx in flower.
2. Jacuzzi.
3. Ultrasonic waves in military field.
4. Triangular glass prism.

C From the opposite figure find :

1. Periodic time.
2. Wave velocity.



Question 3**A** Write the scientific term of each of the following :

1. It is the process of transfer of pollen grains from the anther of a flower to the stigma in the same flower.
2. The motion produced as a result of the vibration of the particles of the medium in a certain point in a certain direction.
3. A medium doesn't allow light rays to penetrate through.
4. Two glands of oval shape that produce the male gametes in human.

B Mention only one example for the following :

1. Unisexual flower.
2. The phenomenon that result from refraction and reflection of light on the desert roads.
3. Mechanical transverse wave.
4. An animal can produce ultrasonic waves.

C Give reasons for :

1. The oscillatory motion is considered as a periodic motion.
2. We see lightning before hearing thunder.

Question 4**A** Correct the underlined words :

1. The tone produced from a tuning fork is pure and simple tone known as the complex tones.
2. The estrogen hormones is responsible for pregnancy to continue.
3. The simple harmonic motion is considered the simplest form of transitional motion.
4. White light is a mixture of nine colours known as spectrum colours.

B What happens when ... ?

1. Light ray travels from air to glass.
2. The density of the medium increase (according to the sound intensity).
3. Incidence of light rays on a rough surface.
4. The distance between the source of the light and a surface decrease (according the light intensity).

C Calculate the frequency of a musical tone similar to the frequency of an emitted tone using Savart's wheel rotated with a velocity of 960 cycles in two minutes, given that the number of teeth of the gear is 30 teeth.

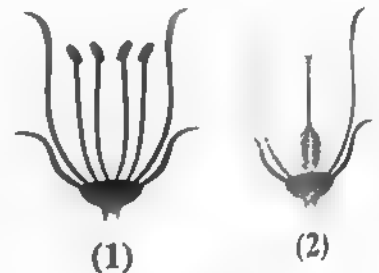
Answer the following questions :

Question 1

- A** Write the scientific term of each of the following :
1. They are sound waves of frequencies ranging from 20 Hz to 20 KHz.
 2. It is the angle between the emergent light ray and the normal at the point of emergence on the interface.
 3. It is the highest point of the particles of the medium in the transverse wave.
- B** Put (✓) or (✗) :
1. The speed of the wave is fixed in the same medium and differs from one medium to another. ()
 2. The corolla is the male reproductive organ in the flower. ()
- C** Calculate the wave length of a sound wave propagating through sea water with velocity 1500 m/sec. knowing that its frequency is 10 kilohertz.

Question 2

- A** Give reasons for :
1. Man can't hear sounds produced by dolphins.
 2. When light ray travels from air to water it refracts near the normal.
 3. Flowers pollinated by insects produce coarse pollen grains.
 4. The product of frequency and periodic time equals unity.
- B** Compare between :
1. Regular and Irregular reflection.
 2. Oscillatory motion and wave motion.
- C** Mention the sex in each flower from the following :



Question 3

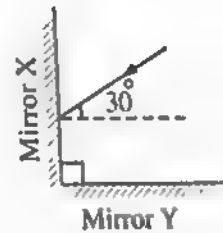
- A** Complete the following sentences :
1. The human zygote results from the combination of and and it contains chromosomes.
 2. The partial immersed pencil in water looks broken because of
 3. The string are fixed above an empty wooden box in guitar to
 4. The frequency of the vibrating body is measured in units
 5. Sperm consists of , central piece and

B Mention used for :

1. Triangular prism.

2. Savart's wheel.

C Complete the path of the rays in the figure, And find the angle of reflection on the mirror Y.



Question 4

A Choose the correct answer :

1. Sexual reproduction in plants take place in

a. flowers.

b. corolle.

c. calyx.

d. sepals.

2. The sound waves are waves.

a. longitudinal

b. transverse

c. electromagnetic

d. no right answer

3. Fertilization occurs when is formed.

a. embryo

b. zygote

c. ovum

d. endometrium

4. light has a higher frequency than yellow light.

a. Red

b. Orange

c. Green

d. White

B What's meant by ... ?

1. Wave length of sound wave is 3 cm

2. The absolute refractive index of glass = 1.5

C Find the number of rotations in 2 minutes made by savart's wheel producing sound of frequency 300 Hz, if a metallic plate touches one gear of 100 teeth.

21 Port Said Governorate

Science Inspectorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. Radio waves are considered as waves, whereas sound waves are waves.

2. The complete oscillation comprises consecutive displacements, each of them is known as

3. Musical tones have a frequency, whereas noise has frequency.

4. A flower arises from a bud, usually emerging from the axile of a leaf known as the

B Correct the underlined words :

1. The transitional motion is the motion repeated through equal intervals of time.

2. The calyx of the flower consists of green leaves called the petals.

PART 3

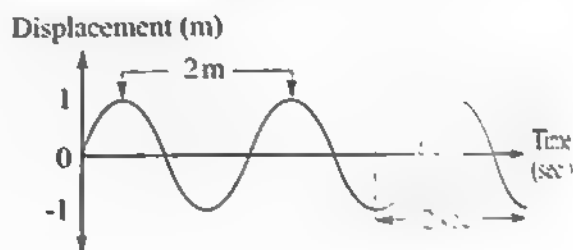
3. During pregnancy, the vagina is responsible for the nourishment of the embryo through the umbilical cord.
 4. After fertilization, the ovary of the flower grows to become the seed.
- C** Savart's wheel rotates with a rate of 300 cycles per minute, a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of teeth of the gear.

Question 2

- A** Cross out the odd word, then explain how other words are related to each other :
1. Tuning fork motion – Rotary bee motion – Stretched string motion – Spring motion.
 2. Stigma – Stamen – Style – Ovary.
 3. Wind direction – Frequency – Amplitude – Medium density.
 4. Cutting – Pollination – Tissue culture – Grafting.
- B** Put (✓) or (✗) :
1. The speed of sound waves through air is faster than their speed through wood. ()
 2. In wind pollinated insects, stigmas are feathery-like and sticky. ()
 3. The absolute refractive index of any transparent medium is always less than one. ()
 4. The mirage is a natural phenomenon due to light reflection and refraction. ()

- C** From the opposite figure :

Calculate the propagation speed of this wave.

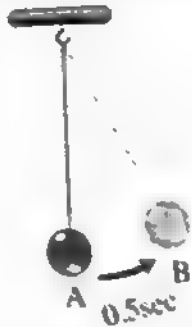
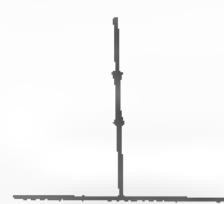
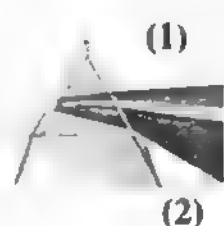
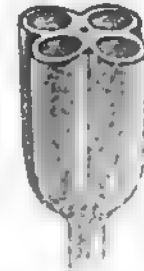


Question 3

- A** Choose the correct answer :

1. The product of the frequency \times periodic time equals
 a. a variable value. b. a negative value. c. a fraction of ten. d. one.
2. Sound intensity is measured by
 a. Hertz. b. watt/sec. c. m/sec. d. watt/m².
3. The fruit of contains many seeds.
 a. peach b. beans c. olive d. mango
4. The number of chromosomes in the zygote fertilized ovum equals the number in the ovum.
 a. double b. half c. quarter d. the same

B Answer the question below each of the following figures :

1. 	2. 	3. 	4. 
(1) Find the periodic time.	(2) Find the angle of reflection.	(3) Name the colours (1) and (2).	(4) Name the figure.

C What are the results of vibration of the medium particles perpendicular to the wave propagation direction and what are the components of this wave ?

Question 4

A Write the scientific term of each of the following :

1. The number of complete oscillations made by a vibrating body in one second.
2. The tones which associate the fundamental tone which are higher in pitch but lower in intensity
3. The amount of light incident perpendicular onto a unit area of a surface in one second.
4. The nuclei of the sperm and ovum fuse together to form the fertilized ovum known as the zygote.

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Regular reflection	a. light changes its direction when it travels from a transparent medium to another one of different optical density.
2. Irregular reflection	b. light waves return back to the same medium of incidence when they meet a reflecting surface.
3. Light refraction	c. light rays return in different directions when they fall on a rough surface.
4. Light reflection	d. light rays return in one direction when they fall on a glistening surface.
	e. the ability of the transparent medium to refract light.

C Compare between :

High-pitched sound and low-pitched sound in terms of (frequency – an example for each).

4. Which of the following flowers can't form fruit ?



a.



b.



c.

B Correct the underlined words :

1. The complete oscillation includes 8 amplitudes.
2. The deviation of indigo light colour is less than that of green light colour.
3. Ultrasonic waves have frequencies ranging from 20 to 20000 Hz.
4. Gynoecium is the male reproductive organ of the flower.

C Compare between : Mechanical waves and electromagnetic waves (definition & example).

Question 3

A Write the scientific term of each of the following :

1. The motion which is regularly repeated in equal periods of time.
2. It is a natural phenomenon that takes place on desert roads at noon.
3. It is a genital system disease that causes by spiral-shaped bacteria.
4. The process of producing large numbers of plants from small part of it.

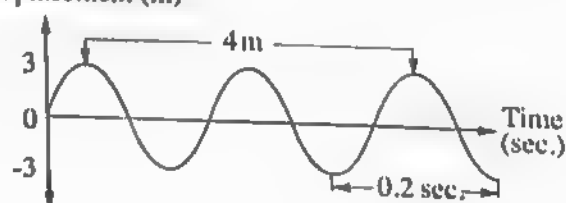
B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Calyx	a. it is the area in the wave at which the medium particles are of lowest density and pressure.
2. Noise intensity	b. it's leaf is called "petal".
3. Rarefaction	c. is measured in "Decibel".
4. The sound pitch	d. a property by which the ear can distinguish between harsh and sharp sound.
	e. it's leaf is called "sepal".

C From the opposite figure find :

1. Amplitude.
2. Wavelength.
3. Frequency.
4. The wave velocity.

Displacement (m)



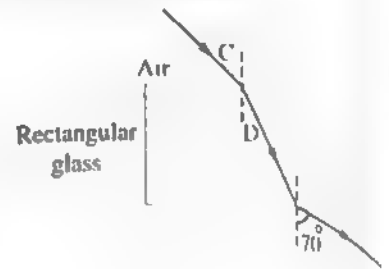
Question 4

A Rearrange these words according to which between brackets :

1. Red – Green – Blue – Yellow. (ascending according to energy of light waves).
2. Water – Wood – Air – Carbon dioxide. (descending according to sound velocity).
3. Corolla – Stamen – Calyx – Carpel. (from outer to inner in flower).
4. Water – Diamond – Air – Glass. (ascending according to the optical density).

B From the following figures answer, Find :

1. The measurement of angle (C).
2. Mention the name of angles (D).



C Calculate the frequency of a musical tone similar to the frequency of a produced tone using Savart's wheel rotated with velocity of 480 cycles in one minute, given that the number of teeth of the gear is 30 teeth.

23 El-Menia Governorate

Deirmwas Official School For Language

Answer the following questions :

Question 1

A Choose the correct answer :

1. The result of multiplying the frequency of an oscillating body by its periodic time equals
a. 0.5 b. 0.25 c. 0.3 d. 1
2. The human ear can distinguish sounds of frequency
a. 50 KHz b. 30 KHz c. 300 Hz d. 5 Hz
3. The right ovary in the female human produces a ripe (mature) ovum every days.
a. 24 b. 28 c. 34 d. 56
4. The human skin is considered as medium.
a. transparent b. opaque c. translucent d. semi-transparent

B Correct the underlined words :

1. Androecium is the first whorl of the floral leaves.
2. Compression is the highest point of the particles of the medium in the transverse wave
3. Light refraction is the rebounding of light waves in the same medium on meeting a reflecting surface.
4. The midpiece of sperm contains chloroplasts which are responsible for energy production needed for the sperms movement.

C Give reasons for :

1. The waves produced due to vibration of a string are transverse mechanical waves.
2. The use of ultrasonic waves in milk sterilization.

Question 2

A Write the scientific term :

1. The transfer of pollen grains from the anther of one flower to the stigma of the same flower.
2. It is the quantity of light falling perpendicular to a unit area of a surface in one second.
3. The maximum displacement achieved by the oscillating body away from its rest position.
4. The ability of the transparent medium to refract light.

B Put (✓) or (✗) :

1. Man cannot reproduce asexually. ()
2. The measuring unit of noise intensity is meter. ()
3. Light travels in curved lines. ()
4. Sound velocity through liquids is more than that through gases. ()

C What is meant by the following ... ?

1. Fertilization in human.
2. Rarefaction.

Question 3

A Complete the following sentences :

1. Waves are classified according to the ability to propagate and transfer energy into and
2. A complete oscillation consists of successive displacement and each of them is called
3. The hormone in males and hormone in females are responsible for the appearance of secondary sexual characters.
4. Angle of is the angle between the refracted light ray and at the point of incidence on the interface.

B Cross out the odd word :

1. Yellow – Blue – White – Violet.
2. Pendulum motion – Spring motion – Rotary bee motion – Stretched string motion.
3. Cutting – Pollination – Layering – Grafting.
4. AIDS – Gonorrhea – Syphilis – Measles.

C Write one function for each of the following :

1. The glass prism.
2. The epididymis.

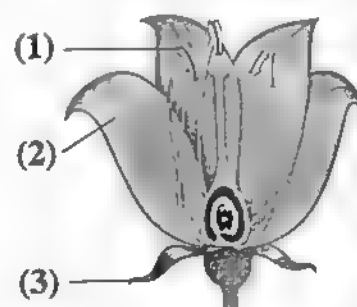
Question 4

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Wave velocity	a. from the factors affecting sound intensity.
2. Frequency	b. always greater than one.
3. The wind direction	c. the distance covered by the wave in one second.
4. Absolute refractive index	d. is measured by Hertz.

B Look at the figure and answer :

1.
2.
3.
4. The sex of this flower is



C Problem :

Savart's wheel rotates with a rate of 300 cycles per minute, a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of teeth of the gear.

24 Assiut Governorate

Science Inspectorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. Waves are classified according to the ability to propagate and transfer energy into and waves.
2. Angle of is the angle between the refracted light ray and at the point of incidence on the separating surface.
3. The hormone in males and the hormone in females are responsible for the appearance of secondary sexual characters.
4. The crest in wave is equivalent to in longitudinal wave.

B Cross out the odd word then state the relation among the remaining :

1. Red – Yellow – White – Blue.
2. Cuttings – Pollination – Layering – Grafting.
3. Sound wave – Light wave – Radio wave – Infrared wave.
4. Stigma – Stamen – Style – Ovary.

C Give reasons for :

1. We see lightening before hearing thunder.
2. Occurrence of mirage phenomenon in desert regions at noon.

Question 2

A Correct the underlined words :

1. Light travels in curved lines.
2. Reproduction by tuber happens in orange.
3. Speed of the sound in water slower than in air.
4. We see the submerged objects in water in a lower position than its real position.

B Choose the correct answer :

1. Light waves are
 - a. mechanical transverse.
 - b. electromagnetic longitudinal.
 - c. electromagnetic transverse.
 - d. no answer.
 2. If the distance between the center of the third compression and the center of the fifth compression on the wave propagation is 20 cm., then the wavelength of this wave is
 - a. 40 cm.
 - b. 20 cm.
 - c. 10 cm.
 - d. 5 cm.
 3. Fertilization occurs when is formed.
 - a. embryo
 - b. zygote
 - c. endometrium
 - d. ovum
 4. All of the following are factors affecting sound intensity except
 - a. amplitude of vibration.
 - b. frequency.
 - c. medium density.
 - d. wind direction.
- C Savart's wheel rotates with a rate of 300 cycles per minute a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of teeth of the gear.**

Question 3

A Write the scientific term of each of the following :

1. Changing the path of light when travel from a transparent medium to antoher transparent medium of different optical density.
2. A new method to produce large numbers of plants from a small part of it.
3. The number of complete oscillations produced by the oscillating body in one second.
4. Short stem where the leaves developed and modified into reproductive organs.

B Put (✓) or (x) :

1. The energy of red light photon is less than that of orange light photon. ()
2. The movement of the clock pendulum is an example for wave motion. ()

3. The corolla is the male reproductive organ in the flower. ()

4. Palm flowers are unisexual. ()

C What is meant by ... ?

1. Absolute refractive index of water is 1.33

2. The wavelength of sound wave is 30 cm.

Question 4

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The sound pitch	a. it is distance covered by the wave in one second.
2. The sound intensity	b. is the property by which the ears can distinguish between sound levels either sharp or harsh.
3. Light intensity	c. is the property by which the ears can distinguish between sounds either strong or weak.
4. Wave velocity	d. it is the quantity of light falling perpendicular to a unit area of a surface in one second.

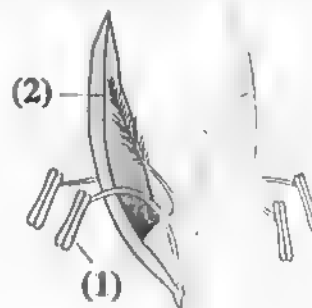
B The opposite figure shows a flower being pollinated by wind (air) :

Write the labels for each of :

1.

2.

3. Mention two characteristics that make this flower pollinated by wind (air).



C Compare between longitudinal waves and transverse waves (related to the definition).

25 Qena Governorate

Science Inspectorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. In the waves, the particles of medium oscillate perpendicular to the wave propagation direction.

2. In spectrum colours, the colour has the highest frequency and shortest wavelength.

3. After fertilization, the ovary grows forming the

4. The measuring unit of sound intensity is

B Cross out the odd word :

1. Pendulum motion – Spring motion – Rotary bee motion – Stretched string motion.
2. Stigma – Filament – Ovary – Style.
3. Thyroid gland – Prostate gland – Cowper's gland – Seminal vesicles.
4. Glass – Water – Air – Wood.

C Give reason for : the use of ultrasonic waves in milk sterilization.

Question 2

A Write the scientific term :

1. The maximum displacement done by oscillating body away from its rest position.
2. Changing the path of light when it travels from a transparent medium to another transparent medium of different optical density.
3. The cell resulting from the fusion of male gamete and female gamete nuclei.
4. The female sex hormone which is responsible for the appearance of secondary female characters.

B Correct the underlined words :

1. The absolute refractive index is equal to 1.
2. Human can distinguish sounds of frequencies between 10 : 20 Hz.
3. Reproduction by tubers can be used in apples.
4. The oscillating body of frequency 360 Hz makes 180 complete oscillations in half a minute.

C What's meant by periodic time ?

Question 3

A Choose the correct answer :

1. When the distance between the sound source and the ear doubled, the sound intensity
a. decreases to half. b. increases twice. c. decreases to quarter. d. increases 4 times.
2. Artificial vegetative reproduction by cutting can be done in
a. peach. b. palm. c. grapes. d. olive.
3. If the angle between the incident light ray and the reflecting surface is 50° , so the angle of reflection equals
a. 40° b. 50° c. 60° d. 90°
4. The floral whorl which is absent in the female flower is
a. calyx. b. corolla. c. androecium. d. gynoecium.

B Complete the following table :

Points of comparison	Mechanical waves	Electromagnetic waves
Definition :
Example :

C Savart's wheel rotates with rate 300 cycles per minute, a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of one gear. Calculate the number of the teeth.

Question 4

A Put (✓) or (✗) :

1. Sound velocity through liquids is more than that through gases. ()
2. The submerged object in water is seen in an apparent position above its real position. ()
3. Sound intensity decreases when the source of sound touches an empty box. ()
4. The corolla consists of bright coloured scented leaves. ()

B Give one example for the following :

1. Unisexual flower.
2. Fruit has one ovule.
3. Natural phenomenon related to reflection and refraction of light.
4. Disease arises from sexual contact.

C What happens when a light ray falls perpendicular on a reflecting surface ?

Cairo Governorate

1 Helwan Education Zone

1 (A) 1. d

2. a

3. c

4. c

(B) 1. - Longitudinal wave : The particles of the medium vibrate along the direction of wave propagation.

- Transverse wave : The particles of the medium vibrate perpendicular to the direction of wave propagation.

2. - Pollination by air :

1. Anthers are hanged to be easily opened by air.

2. Stigmas are feathery like and sticky to catch pollen grains easily.

- Pollination by insects :

1. Petals are coloured and scented to attract insects to feed on their nectar.

2. Pollen grains are sticky or having a coarse surface to adhere on the insect body.

(C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{100 \times 1 \times 60}{300} = 20 \text{ gear teeth}$$

2 (A) 1. Because lightning (light waves) is electromagnetic waves but thunder (sound waves) is mechanical waves and the velocity of electromagnetic waves is much greater than that of mechanical waves.

2. Because the frequency of the violet light is greater than that of the red light and there is a directly relation between the quantum of energy (photon energy) and the photon frequency.

3. Because the flowers contain only male or female reproductive organ.

4. Because it is the medium which allows most of light to pass through it and we can see objects clearly through it.

(B) 1. They are used in breaking down kidney and ureter stones and diagnosis of male prostate gland tumors.

2. - It protects the reproductive organs.

- It attracts the insects to the flower which help in the reproduction process.

3. It is used to analyze the white light into 7 spectrum colours.

4. It produces large number of a plant by using a part of it.

(C) 1. It reflects on itself.

2. It will germinate forming a pollentube.

3 (A) 1. 20 : 20000 Hz.

2. root.

3. Progesterone

4. Inflorescence

(B) 1. d

2. c

3. c

(C) 1. The odd word is : sound waves.

The remaining words are :

Electromagnetic waves.

2. The odd word is : White.

The remaining words are : From the 7 spectrum colours.

4 (A) 1. Asexual (vegetative) reproduction.

2. Infrasonic waves.

3. Fertilization process.

4. Absolute refractive index of a medium.

(B) 1. (x) Androecium is

2. (✓)

3. (✓)

4. (x) for the oscillatory motion.

(C) 1. It is the quantity of light falling perpendicular to a unit area of a surface in one second.

2. They are sound waves of frequencies ranging from 20 Hz to 20 KHz.

2 El-Sahel Educational Zone

1 (A) 1. Medical – industrial fields.

2. increases – increasing

3. watt/m² – decibel

4. reflection – normal.

- (D) 1. It means that the number of complete oscillations made by the tuning fork in one second = 652 complete oscillations.
 2. It is the medium which allows most of light to pass through it and objects can be seen clearly through it.
 3. It means that the ratio between the velocity of light through air to the velocity of light through glass = 1.5
 4. It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

(C) The importance of petals (corolla) :

- Protection of reproductive organs of the flower.
- Attraction of insects to the flower, which help in the reproduction process.

1 (A) 1. 2 cm.

2. Periodic time = the time of one complete oscillation = 2 sec.

3. Frequency = $\frac{1}{\text{periodic time}} = \frac{1}{2} = 0.5 \text{ Hz.}$

4. Time of one amplitude = $\frac{1}{4}$ periodic time
 $= \frac{1}{4} \times 2 = 0.5 \text{ sec.}$

(B) 1. Because the angle of incidence = the angle of reflection = zero.

2. Because lightning is electromagnetic waves (light waves) but thunder is mechanical waves (sound waves) and the velocity of electromagnetic waves is much greater than that of mechanical waves.

3. Because the flowers contain only male or female reproductive organ.

(C) \therefore Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

\therefore Number of gear teeth

$$= \frac{\text{Sound frequency} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{100 \times 1 \times 60}{30} = 200 \text{ gear teeth.}$$

1 (A) 1. Gynoecium.

2. Optical density.

3. Angle of emergence. 4. Sonic waves.

(B) 1. Look at the notebook on page (96).

2. Look at the notebook on page (113).

(C) 1. is considered as an opaque medium.

2. Light reflection is



(A) 1. b

2. b

3. a

4. b

(B) 1. - Mechanical waves :

They need a medium to propagate through and do not propagate through vacuum.

- Electromagnetic waves :

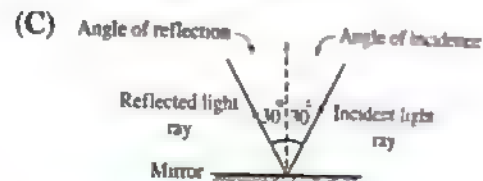
They do not need a medium to propagate through and propagate through vacuum.

2. - Stamen :

It consists of filament and another which produces pollen grains.

- Carpel :

It consists of stigma, style and ovary which produces ovules.



3 Helwan Educational Zone

1 (A) 1. Oscillatory motion. 2. Optical density.

3. Caly (sepal). 4. Transverse wave.

(B) 1. Because the number of vibrations of sound (number of sound waves) is low, so, the frequency is low and the sound of this animal (lion) is low pitched (harsh or rough).

2. Bisexual flower (Hermaphrodite flower).

3. Wave velocity

$$= \text{Wave frequency} \times \text{wavelength}$$

$$\text{Wavelength} = \frac{\text{Distance covered by waves}}{\text{Number of waves}}$$

$$= \frac{10}{2} = 5 \text{ metres.}$$

$$\text{Wave frequency} = \frac{\text{Number of waves}}{\text{Time in sec.}}$$

$$= \frac{1}{0.2} = 2.5 \text{ Hz.}$$

$$\therefore \text{Wave velocity} = 2.5 \times 5 = 12.5 \text{ m/sec.}$$

4. The angle of reflection = the angle of incidence = zero.

(C) Because lightning is electromagnetic waves (light waves) but thunder is mechanical waves (sound waves) and the velocity of electromagnetic waves is much greater than that of mechanical waves.

- 2 (A) 1. Water waves. 2. Analyze light.
3. Watermelon. 4. Pancreas gland.

- (B) 1. 20 2. larger than 3. tubers.
4. decreases to quarter.

(C) Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$

$$= \frac{240}{1 \times 60} = 4 \text{ Hz.}$$

- 3 (A) 1. c 2. b 3. a 4. a
(B) 1. e 2. d 3. a 4. c

(C) The scion feed on the juice of the stock (apricots) and grows forming fruits belong to the type of the scion (peaches).

- 4 (A) 1. (✓)
2. (✗) is higher than
3. (✓)
4. (✗) is always greater than one.
(B) 1. rarefaction 2. transparent
3. Testosterone 4. equal to

(C) In this step :

- The head of the sperm secretes enzymes to dissolve the cellular membrane of the ovum and Facilitate its penetration inside the ovum
- Only one sperm can penetrate the cellular membrane of the ovum.
- The Ovum surrounds itself with a membrane that prevents the penetration of any other sperm.

4 Hellopolly Modern Language School

- 1 (A) 1. electromagnetic – mechanical
2. female – zygote
3. 1 cm – 0.8
4. 60° – 120°

- (B) 1. (✗) 2. (✓) 3. (✗) 4. (✓)

(C) 1. It is used to split the white light into 7 spectrum colours.

2. They are used in sterilization of food, water and milk.

- 2 (A) 1. c 2. c
3. b 4. a

- (B) 1. 10 2. decreases to quarter.
3. Mirage 4. Reproduction process

(C) 1. To attract insects to the flower, which help in the reproduction process.

2. It means that the ratio between the velocity of light through air and that through water equals to 1.33.

3 (A)

P.O.C	Mechanical waves	Electromagnetic waves
Definition :	They are the waves which need a medium to propagate and do not propagate through vacuum.	They are the waves which do not need a medium to propagate and propagate through vacuum.
Speed :	Their speed is relatively low.	Their speed is great (3×10^8 m/sec).
Type :	They are transverse or longitudinal waves.	They are transverse waves only.
Examples :	<ul style="list-style-type: none"> • Water waves (transverse waves) • Sound waves (longitudinal waves) 	<ul style="list-style-type: none"> • Visible light waves. • Infrared waves. • Radio waves.

- (B) 1. c 2. c 3. c 4. b

(C) 1. The velocity will be maximum at rest position.

2. It will reflect on itself.

- 1 (A) 1. • The odd word is : Sound wave
 • The name of the others : Electromagnetic waves.
 2. • The odd word is : Root.
 • The name of the others : The floral whols of the flower.
 3. • The odd word is : Rotary bee motion.
 • The name of the others : Oscillatory motion.
 4. • The odd word is : White.
 • The name of the others : Spectrum colours.
- (B) 1. Violet colour. 2. Infrasonic waves.
 3. Sound type (quality).
 4. Asexual (vegetative) reproduction.

(C) ∴ Sound frequency (F)

$$= \frac{\text{No. of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency} \times \text{Time in seconds}}{\text{No. of cycles}}$$

$$= \frac{200 \times 1 \times 60}{80} = 150 \text{ gear teeth.}$$

5 El-Sayed Khadija Official Lang. Sch.

1 (A) 1. decibel – Watt/m²

2. fruit – seed.

3. inversly – the square

(B) 1. It is used to produce large number of a plant by using a part of it.

2. It is used to treat sprains and cramps.

3. They are used in :

- Breaking down kidney and ureter stones.
- Diagnosis of male prostate gland tumors.
- Discovering malignant tumors.

(C) ∴ Sound frequency (F)

$$= \frac{\text{No. of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{300 \times 2 \times 60}{200} = 180 \text{ gear teeth.}$$

1 (A) 1. Flower.

2. Optical density

3. Longitudinal wave. 4. Photon energy

(B) 1. The sound intensity increases.

2. The angle of refraction is larger than the angle of incidence because the light ray refract far from the normal.

3. The wave frequency decreases to quarter.

4. The velocity of the oscillatory body will be maximum at its rest position

(C) ∴ Absolute refractive index of diamond

$$= \frac{\text{The speed of light through air}}{\text{The speed of light through diamond}}$$

∴ The speed of light through diamond

$$= \frac{\text{The speed of light through air}}{\text{Absolute refractive index of diamond}}$$

$$= \frac{3 \times 10^8}{2.4} = 125 \times 10^6 \text{ m/sec.}$$

1 (A) 1. c 2. d 3. b 4. a

(B) 1. • Regular reflection :

The light rays reflect in one direction.

• Irregular reflection :

The light rays reflect in different (many) directions.

2. • Mechanical waves :

They are waves which need a medium to propagate, where they do not propagate through vacuum.

• Electromagnetic waves :

They are waves which do not need a medium to propagate, where they propagate through vacuum.

3. • Pollination by air :

Anthers are hanged to be easily opened by air.

• Pullination by insects :

Petal is coloured and scented to attract insects (like bees) to feed on its nectar.

4. • Transverse waves .

The particles of the medium vibrate perpendicular to the direction of wave propagation

• Longitudinal waves .

The particles of the medium vibrate along the direction of wave propagation

(C) ∴ Wave velocity =
Wave frequency × Wavelength

$$\therefore \text{Wavelength} = \frac{\text{Wave velocity}}{\text{Wave frequency}}$$

$$= \frac{3 \times 10^8}{6 \times 10^{14}} = 5 \times 10^{-7}$$

- 4 (A) 1. sperm 2. a periodic motion.
3. equals to 4. Mirage

- (B) 1. They are tones that accompany the fundamental tone but they are higher in pitch and lower in intensity, and differ from one instrument to another.
2. It is the fusion of the nucleus of the male gamete (sperm) with the nucleus of the female gamete (ovum) to form a fertilized ovum (zygote).
3. The distance covered by the wave in one second.

(C) 1. The amplitude = 10 cm.

2. Wavelength = $\frac{\text{Distance covered by waves}}{\text{Number of waves}}$

$$= \frac{16}{2} = 8 \text{ cm.}$$

3. The frequency = $\frac{\text{Number of waves}}{\text{Time in seconds}}$

$$= \frac{2}{0.8} = 2.5 \text{ Hz.}$$

4. Periodic time = $\frac{1}{\text{Frequency}}$

$$= \frac{1}{2.5} = 0.4 \text{ sec.}$$

6 Al-Shrouk Educational Zone

- 1 (A) 1. reproduction by cutting – reproduction by grafting.
2. mirage. 3. 20 – 20000
4. vibration 5. the velocity of light.
6. the pitch (frequency) of an unknown tone.
7. Tulip – wall flower

(B) 1. Wavelength = $\frac{\text{Distance covered by waves}}{\text{Number of waves}}$

$$= \frac{8}{2} = 4 \text{ m.}$$

2. Frequency = $\frac{\text{Number of waves}}{\text{Time in seconds}}$

$$= \frac{1}{2} = \frac{1}{6} \text{ Hz.}$$

3. Amplitude = 2 m.

4. Wave velocity = Wavelength × Frequency

$$= 4 \times \frac{1}{6} = 0.66 \text{ m/sec.}$$

- 2 (A) 1. b 2. a 3. c 4. b

(B) a. It protects the inner parts of the flower specially before blooming.

b. They are used in medical field for breaking down kidney and ureterstones.

(C) 1. The motion of a rotary bee is as a periodic motion only because it is repeated regularly at equal time intervals but it is not an oscillatory motion because it is not repeated on the 2 sides of its rest position

2. Because the flowers contain only male or female reproductive organ.

- 3 (A) 1. Asexual (vegetative) reproduction.

2. Corolla (petals).

3. Transparent and translucent media

4. Optical density.

(B) 1. • The red colour is the upper line.

• The violet colour is the lower line.

2. It analysis the white light into 7 spectrum colours.

(C) 1. • Male flower has a male reproductive organ which is called androecium and produces pollen grains.

• Female flower has a female reproductive organ which is called gynoecium and produces ovules.

2. • Mechanical waves need a medium to propagate and cannot propagate through vacuum.

• Electromagnetic waves do not need a medium to propagate and propagate through vacuum.

- 4 (A) 1. (✓) 2. (✓) 3. (✓) 4. (x)

5. (x) 6. (x)

(B) 1. Photon energy

$$= \text{Planck's constant} \times \text{Photon frequency}$$

2. Absolute refractive index of a medium

$$= \frac{\text{The velocity of light through air}}{\text{The velocity of light through the medium}}$$

- (C) 1. Irregular light reflection will be occurred and the light rays will reflect in different (many) directions.
2. The ovary develops to become a fruit

Giza Governorate

7 Educational Zone

- 1 (A) 1. 5 Hz.
2. 30°
3. metre.
4. less than 20
- (B) 1. Motion of tuning fork.
2. Sound wave.
3. Tissue paper
4. Light wave.
- (C) It reflects on itself.
- 2 (A) 1. (✓) 2. (x) 3. (x) 4. (✓)
(B) 1. Wood.
2. Testes.
3. Black.
4. Prostate gland.
(C) It is used to determine the pitch (frequency) of an unknown tone.

- 3 (A) 1. Light refraction. 2. Mirage.
3. Harmonic tones. 4. Fertilization process.
(B) 1. less 2. testosterone.
3. calyx (sepals). 4. straight
(C) The velocity of sound wave in air
= Frequency of sound wave × Wavelength
= $200 \times 1.7 = 370 \text{ m/sec.}$

- 4 (A) 1. a 2. c 3. d 4. b
(B) 1. Second (sec.)
2. metre/second (m/sec.).
3. Metre (m).
4. watt/m².
(C) Because the velocity of light through air is always greater than the velocity of light through any transparent medium.

8 Exper. lang. Sch. Directorate

- 1 (A) 1. 4 – amplitude. 2. crest – trough.
3. white – 7 spectrum 4. seed – fruit.
(B) 1. Increases.
2. potatoes and sweet potatoes.
3. The sperm
4. Testosterone

Answers of Final Examination

- (C) ∴ Sound frequency (f)
= $\frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$
∴ Number of gear teeth
= $\frac{\text{Sound frequency (f)} \times \text{Time in seconds}}{\text{Number of cycles}}$
= $\frac{100 \times 1 \times 60}{120} = 50 \text{ gear teeth}$

- 2 (A) 1. Periodic motion
2. Absolute refractive index
3. Light reflection.
4. Flower.

- (B) 1. Sound wave. 2. Air.
3. The density of the medium.
4. Palm trees.

- (C) 1. Periodic time = $2 \times 0.2 = 0.4 \text{ sec}$

$$\text{Frequency} = \frac{1}{\text{Periodic time}} = \frac{1}{0.4} = 2.5 \text{ Hz.}$$

2. Wavelength

$$= \frac{\text{The distance which covered by waves}}{\text{Number of waves}}$$

$$= \frac{4}{2} = 2 \text{ meters.}$$

- 3 (A) 1. b 2. b 3. a 4. d

- (B) 1. - Transverse wave : The particles of the medium vibrate perpendicular to the direction of wave propagation.
- Longitudinal wave : The particles of the medium vibrate along the direction of wave propagation.
2. - Sound : Its velocity is much less than the velocity of light.
- Light : Its velocity = $3 \times 10^8 \text{ m/sec.}$
3. - Fundamental tones : They are lower in the pitch (frequency).
- Harmonic tones : They are higher in the pitch (frequency).
4. - Male flower : Its symbol is ♂.
- Female flower : Its symbol is ♀.

- (C) The velocity of the oscillating body becomes maximum when it passes through its rest position.

- 4 (A) 1. (x) Motion of the tuning fork is
2. (x) Light 3. (✓)
4. (x) called sepals.

- (B) 1. Wood. 2. White.
3. Drill. 4. Frequency.
(C) Because the angle of incidence = the angle of reflection = Zero.

9 About El-Nomros Educational Zone

- 1 (A) 1. the electromagnetic – vacuum.
2. sexual reproduction – asexual reproduction.
3. 20 – 20000 4. 4 – an amplitude.

- (B) 1. Root. 2. Rotary bee.
3. Testis. 4. Ovary.

(C) Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

$$= \frac{960 \times 30}{120} = 240 \text{ Hz.}$$

- 2 (A) 1. c 2. b 3. c 4. b

- (B) 1. Because they are waves which need a medium to propagate and cannot propagate through vacuum.
2. Because the tail is responsible for the movement of the sperm till reaches the ovum.
3. Because they have high ability to kill some types of bacteria and stop the action of some viruses.
4. Because it does not allow light to pass through it and objects cannot be seen through it.

(C) It is the distance covered by the wave in one second.

- 3 (A) 1. (✓) 2. (✗) 3. (✓) 4. (✗)

- (B) 1. Water wave. 2. Potatoes.
3. Voice of woman or sparrow.
4. Clear glass.

- (C) 1. 0.4 sec. 2. 2 cm.

- 4 (A) 1. d 2. c 3. b 4. a

- (B) 1. The sound. 2. Decibel.
3. Mirage.
4. Triangular glass prism.

(C) It reflects on itself.

10 Science Inspectorate

- 1 (A) 1. testosterone – estrogen.
2. regular reflection – irregular reflection
3. green – sepal. 4. 9 Hz – 0.11 sec
(B) 1. (✗) 2. (✗) 3. (✓) 4. (✗)

(C) 1. Wavelength = $\frac{\text{Distance covered by waves}}{\text{Number of waves}}$

∴ Number of waves = 3 waves.

∴ Wavelength = $\frac{15}{3} = 5 \text{ meter.}$

2. Wave velocity = Wavelength × Frequency

∴ Frequency = 100 Hz.

∴ Wave velocity = $5 \times 100 = 500 \text{ m/sec.}$

- 2 (A) 1. a 2. d 3. a 4. a
5. b 6. d 7. b 8. c

- (B) 1. 1. Calyx (sepal). 2. Corolla (petal).
3. Anther. 4. Ovule (in the ovary).

2. Bisexual (Hermaphrodite) flower – production of pollen grains (inside the pollen chamber).

(C) 1. Because lightning is electromagnetic waves (light waves) but thunder is mechanical waves (sound waves) and the velocity of the electromagnetic waves is greater than that of mechanical waves.

2. Because they are used in breaking down kidney and ureter stones without any surgical operations, diagnosis of male prostate gland tumors and discovering malignant tumors.

3. Due to the difference of light velocity between the medium that the light transfer from and the glass.

- 3 (A) 1. Photon energy. 2. Tissue culture.
3. Mirage.

4. Self(auto) pollination.

5. Periodic motion. 6. Wave frequency

7. Fertilization process.

8. Ovulation process.

- (B) 1. Ceramic. 2. White light.
3. Rotary bee. 4. Stamen

(C) 1. The kinetic energy increases

2. The velocity of sound wave in water will increase than that in air, where the velocity of sound in water = 1500 m/s. and that in air = 340 m/s.

1 (A) 1. equals to

3. high

5. an oscillatory

7. half

(B) 1. watt/m²

3. They are used to avoid hazards of noise in loud places.

4. It analysis the white light into 7 spectrum colours.

(C) The absolute refractive index of diamond

$$= \frac{\text{The speed of light in air}}{\text{The speed of light in diamond}}$$

$$= \frac{3 \times 10^8}{1.25 \times 10^8} = 2.4$$

Alexandria Governorate

11 Science Inspectorate

1 (A) 1. The odd word is : Rotary bee motion.
The rest words are : Oscillatory motion words.

2. The odd word is : Sound waves.

The rest words are : Electromagnetic waves.

3. The odd word is : Style.

The rest words are : Parts of the male reproductive organ in flower (stamen).

4. The odd word is : Vas deferens.

The rest words are : Parts of the female reproductive system.

(B) 1. watt/m²

2. increases.

3. 20

4. wind (air).

(C)

P.O.C	Regular reflection	Irregular reflection
The texture of the reflecting surface :	Smooth	Rough
The direction of the reflected rays :	The light rays which fall on a smooth reflecting surface reflect in one direction.	The light rays which fall on a rough reflecting surface reflect in different (many) directions.

Answers of Final Examinations

2 (A) 1. Amplitude = 2 cm.

$$2. \text{Periodic time (T)} = \frac{\text{Time in seconds}}{\text{Number of waves}}$$

$$= \frac{4}{1} = 4 \text{ sec.}$$

$$3. \text{Frequency (F)} = \frac{1}{\text{Periodic time}} = \frac{1}{4} \text{ Hz.}$$

4. Wavelength (λ)

$$= \frac{\text{Distance covered by waves}}{\text{Number of waves}}$$

$$= \frac{10}{1} = 10 \text{ m.}$$

(B) 1. Compression.

2. The sound pitch.

3. Violet colour.

4. Fertilized ovum (zygote).

(C) A transverse waves will be formed.

3 (A) 1. c 2. b 3. d 4. a

(B) 1. d 2. c 3. a 4. b

(C) \therefore Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

\therefore Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{1200 \times 1 \times 60}{600} = 120 \text{ gear teeth.}$$

4 (A) 1. Corolla (petal) – Calyx (sepal).

2. The protection of the reproductive organs and attraction of insects to the flower which help in the reproduction process.

– the protection of the inner parts of the flower specially before blooming.

3. female flower – male flower.

4. a fruit.

(B) 1. inversely

2. straight

3. greater than

4. single (one) seed

(C) Because the light intensity is inversely proportional to the square of the distance between the light source and the surface according to the inverse square law of light ($I \propto \frac{1}{a^2}$).

12 - Al-Montazh Educational Zone

- 1 (A) 1. b 2. c 3. c 4. a
5. d 6. c

(B) 1. - Regular reflection :

It is the reflection of light rays when they fall on a smooth reflecting surface, where the incident light rays reflect in one direction.

- Irregular reflection :

It is the reflection of light rays when they fall on a rough reflecting surface, where the incident light rays reflect in many (different) direction.

2. - Sperm :

It is very small and mobile cell.

- Ovum :

It is large in size, spherical and static cell.

- (C) a. The time of one complete oscillation = 0.02 sec.

$$b. \frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$$

$$\text{or } \frac{1}{\text{periodic time}} = \frac{1}{0.02} = 50 \text{ Hz.}$$

2 (A) 1. Optical density.

2. Typical flower. 3. Light refraction.
4. Sound pitch. 5. The angle of incidence.
6. Crest.

- (B) 1. It means that the ratio between the velocity of light through air to the velocity of light through glass = 1.5

2. It means that the number of complete oscillations made by the tuning fork in one second = 300 complete oscillations.

3. It is the property by which the ears can distinguish strong or weak sounds.

- (C) The first law of light reflection is :

The angle of incidence = The angle of reflection.

3 (A) 1. compressions - rarefactions.

2. decibel - watt/m²

3. female - male

4. 7 - spectrum

5. outside - scrotal sac (scrotum).

- (B) 1. Corolla (petal).

3. Anther.

2. Calyx (sepal)
4. Ovary.

- 1 (A) 1. (x) 2. (x) 3. (✓)
4. (✓) 5. (x)

- (B) 1. They are used in medical field for breaking down kidney and ureter stones without any surgical operations. diagnosis of male prostate gland tumors and discovering malignant tumors.

2. It analysis the white light into seven spectrum colours.

- (C) 1. To attract insects to the flower which help in the reproductive process.

2. Because sound travels through air as spheres of compressions and rarefactions whose centre is the sound source.

13 Borg Al-Arab Educational Zone

1 (A) 1. Wave velocity.

2. Hermaphrodite (bisexual) flower.

3. Complete oscillation.

4. Optical density.

- (B) 1. carpel

2. progesterone

3. female

4. periodic

- (C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth.}$$

2 (A) 1. c 2. a 3. c 4. d

- (B) 1. - The unsuitable word is : Sound wave.

- The remaining words are :
Electromagnetic waves.

2. - The unsuitable word is : light travels through materialistic media only.

- The remaining words are : Properties of light.

3. - The odd word is : Frequency.

- The remaining words are : Factors affect on the sound intensity.

4. - The odd word is : Pollination.

- The remaining words are : Artificial vegetative reproduction.

(C) ∴ Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$
 ∴ Number of complete oscillations
 = Frequency × Time in seconds
 = $6 \times 5 \times 60 = 1800$ oscillations.

- 1 (A) 1. Perpendicular to
 2. the velocity of light through air – the velocity of light through a transparent medium.
 3. watt/m^2 – decibel. 4. insects – pollination

- (B) 1. b 2. d 3. a

- (C) 1. Because the density of carbon dioxide gas is more than that of air since the intensity of sound is directly proportional to the density of the medium.

2. Because the angle of incidence = the angle of reflection = zero.

- 1 (A) 1. (✓) 2. (✓) 3. (✗) 4. (✗)

- (B) 1. It is used to treat sprains and cramps by using hot water and nervous tension by using cold water.
 2. It is used to break down kidney and ureter stones without any surgical operations.
 3. They produce sperms and male sex hormone (testosterone hormone).
 4. It analysis the white light into 7 spectrum colours.

(C) ∴ Wave velocity (V)

$$= \text{Frequency (F)} \times \text{Wavelength } (\lambda)$$

$$\therefore \text{Frequency (F)} = \frac{\text{Number of waves}}{\text{Time in seconds}}$$

$$= \frac{1}{0.2} = 2.5 \text{ Hz.}$$

∴ Wavelength (λ)

$$= \frac{\text{Distance covered by waves}}{\text{Number of waves}}$$

$$= \frac{6}{2} = 3 \text{ metres.}$$

$$\therefore \text{Wave velocity} = 2.5 \times 3 = 7.5 \text{ m/sec.}$$

14 Science Inspector: Qallub Educ. Zone

- 1 (A) 1. Frequency of the oscillating body.
 2. Sound pitch. 3. Light intensity.
 4. Flower. 5. Tissue culture.
 6. The line of wave propagation.

- (B) 1. The wavelength decreases to half.
 2. It will germinate forming a pollen tube.
 3. The light rays reflect in different (many) directions.

(C) The velocity of sound wave propagation
 = wave frequency × wavelength
 = $200 \times 1.7 = 340 \text{ m/sec.}$

- 2 (A) 1. transverse – the compression
 2. inversely – square.
 3. electromagnetic – $3 \times 10^8 \text{ m/sec.}$
 4. pollination – fertilization.
 5. lower – higher
 6. testosterone – estrogen

- (B) 1. Because they have high ability to stop the action of some viruses and kill some types of bacteria.
 2. Because the frequency of red light photon is less than that of the orange light photon and the photon energy is directly proportional to the photon frequency.
 3. Because in maize plant, the transfer of pollen grains is occurred from the anthers of the flower to the stigma of another flower in other plant of the same kind because it is a unisexual flower.

(C) The absolute refractive index of diamond
 = $\frac{\text{The velocity of light through air}}{\text{The velocity of light through diamond}}$
 = $\frac{3 \times 10^8}{1.25 \times 10^8} = 2.4$

- 3 (A) 1. d 2. c 3. b
 4. d 5. b 6. a

(B) 1.

P.O.C	Sound waves	Light waves
The propagation :	<ul style="list-style-type: none"> - They cannot propagate through vacuum and need a medium to propagate through. - The particles of the medium propagate along the direction of wave propagation. 	<ul style="list-style-type: none"> - They can propagate through vacuum and do not need a medium to propagate through. - The particles of the medium propagate perpendicular to the wave propagation.
The type of wave :	Sound waves are mechanical longitudinal waves.	Light waves are electromagnetic transverse waves.

2.

P.O.C	The ovum	The sperm
The size :	It has a small size.	It has a relatively large size.
The mobility :	It is mobile.	It is static (not mobile).

(C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth.}$$

- Q** (A) 1. It is responsible for the continuity of pregnancy.
 2. It protects the inner parts of the flower specially before blooming.
 3. It contains mitochondria which are responsible for energy production needed for sperms movement.
 4. They are used to avoid the hazards of noise in loud places.
- (B) 1. - The odd word : Sound wave.
 - The rest words are : From the examples of the electromagnetic waves.

2. - The odd word : White.
 - The rest words are : Spectrum colours.
 3. - The odd word : Milk.
 - The rest words are : Transparent media.
 4. - The odd word : Epididymis.
 - The rest words are : Parts of the female reproductive system.

(C) 1. Frequency (F)

$$= \frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$$

2. The first law of light reflection is :
 Angle of incidence = Angle of reflection

El-Sharkia Governorate**15 Al-Shaheed Sheriff Talat School**

- 1** (A) 1. sharp – rough sounds.
 2. transverse – compression
 3. fruit – seed. 4. wave – periodic.
 (B) 1. b 2. c 3. d 4. a
 (C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth}$$

2 (A) 1. (✓) 2. (✗) 3. (✗) 4. (✗)

- (B) 1. White. 2. Sound wave.
 3. Air. 4. Epididymis.

(C) Because lightning is electromagnetic waves (light waves) but thunder is mechanical waves (sound waves) and the velocity of electromagnetic waves is much greater than that of mechanical waves.

3 (A) 1. Mixed (cross) pollination.
 2. Mirage. 3. Inflorescence.
 4. Rarefaction.

- (B) 1. Tissue paper.
 2. The density of the medium.
 3. The motion of tuning fork.
 4. Reproduction by cutting.

(C) The periodic time will decrease

- 1 (A) 1. a 2. b 3. c 4. b
 (B) 1. fundamental 2. straight
 3. Ultrasonic 4. greater than
 (C) 50°

Menofia Governorate

16 Shebeen El-Koum Educ. Zone

- 1 (A) 1. 60 – 0.016 2. inversely – directly
 3. acidic – basic (alkaline)
 4. directly – frequency
 (B) 1. Genital associated glands.
 2. Receptacle.
 3. Uterus.
 4. Amplitude.
 (C) • Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

$$= \frac{360 \times 40}{60} = 240 \text{ Hz.}$$

• Wave speed = Wavelength \times frequency
 $= 1.4 \times 240 = 336 \text{ m/sec.}$

- 2 (A) 1. Due to the refraction of light rays coming from the fish where the eye sees the fish in an apparent position on the extensions of these refracted rays.
 2. Because it is graphically represented by a curve.
 3. Because the ovary of peach contains only one ovule, while that of pea contains many ovules.
 4. To dissolve the cellular membrane of the ovum and facilitates its penetration inside the ovum.

- (B) 1. Tubers. 2. Rotary bee motion.
 3. Penis. 4. Sound velocity.

(C) \therefore Wave velocity = Wavelength \times Frequency
 $(V) \quad (\lambda)_1 \quad (F)$

$$\therefore \text{Wavelength } (\lambda) \propto \frac{1}{\text{Frequency } (F)}$$

When the velocity is the same ($V_1 = V_2$)

$$\therefore F_1 = 512 \text{ Hz. and } F_2 = 256 \text{ Hz.}$$

$$\therefore \frac{\lambda_1}{\lambda_2} = \frac{F_2}{F_1} = \frac{256}{512} = \frac{1}{2}$$

Answers of Final Examinations

- 1 (A) 1. (x) 2. (x) 3. (x) 4. (✓)
 (B) 1. It analysis the white light into 7 spectrum colours.

2. It is responsible for the appearance of the signs of puberty in male (secondary male sex characters).
 3. It is used to determine the sound pitch (frequency) of an unknown tone.
 4. It propagates and transfers energy in the direction of propagation.

(C) This means that the periodic time $= \frac{30}{10}$
 $= 3 \text{ seconds.}$

- 4 (A) 1. a 2. c 3. c 4. b

- (B) 1. The amount of light passes through it will decrease.

2. The incident light ray falls perpendicular to the interface between air and water and passes without refraction, so the apparent position is the real position.
 3. The area of the formed light spot increases by increasing the size of the holes.
 4. Ultrasonic waves will kill and stop the action of these viruses.

- (C) The absolute refractive index of diamond

$$= \frac{\text{The speed of light through air}}{\text{The speed of light through diamond}}$$

$$= \frac{3 \times 10^8}{1.25 \times 10^8} = 2.4$$

Garbia Governorate

17 Science Inspectorate

- 1 (A) 1. 10 Hz. 2. Infrasonic
 3. crests – troughs.
 4. self (auto) – mixed (cross)

- (B) 1. 10^6 2. olives 3. 56 4. complete

- (C) \therefore Absolute refractive index of glass

$$= \frac{\text{Velocity of light through air}}{\text{Velocity of light through glass}}$$

$$\therefore \text{The velocity of light through glass}$$

$$= \frac{\text{Velocity of light through air}}{\text{Absolute refractive index of glass}}$$

$$\therefore \text{The velocity of light through air}$$

$$= 3 \times 10^8 \text{ m/sec.}$$

∴ The velocity of light through glass

$$= \frac{3 \times 10^8}{1.5} = 2 \times 10^8 \text{ m/sec.}$$

- 2 (A) 1. Tissue culture. 2. Watt/m².
3. Wave amplitude. 4. Pregnancy period.

- (B) 1. • The odd word is : Filament.
• The other words are : Parts of the female reproductive organ of the flower (gynoecium).
2. • The odd word is : Drill.
• The other words are : Devices give musical tones.
3. • The odd word is : Rotary bee.
• The other words are : From the examples of the oscillatory motion.
4. • The odd is : 10 Hz.
• The others are : Frequencies of sonic waves.

(C) Look at the notebook on page (78).

- 3 (A) 1. (x) The stigma of air pollinated

2. (x) refracts far from the normal

3. (✓) 4. (✓)

- (B) 1. a 2. b 3. b 4. c

(C) 1. Wavelength = $\frac{\text{Distance covered by waves}}{\text{Number of waves}}$

$$= \frac{6}{2} = 3 \text{ m.}$$

2. Frequency = $\frac{\text{Number of waves}}{\text{Time in seconds}}$

$$= \frac{1}{0.3} = 1.66 \text{ Hz}$$

3. Amplitude = 1 m.

4. Wave velocity = wavelength × Frequency
= 3 × 1.66 = 4.98 m/sec.

- 4 (A) 1. It is used to treat sprains and cramps by using hot water and nervous tension by using cold water.
2. It is used to determine the sound pitch (frequency) of an unknown tone.
3. It analysis the white light into 7 spectrum colours.
4. They produce sperms (male gametes) and male sex hormone known as testosterone.

- (B) 1. the incident light ray.
2. the refracted light ray.
3. angle of incidence.
4. angle of refraction.

- (C) 1. The sound intensity will increase by increasing the vibrating surface area by using a resonance box.
2. It appears broken.

Dakahlia Governorate

18 East Mansoura Educational Zone

- 1 (A) 1. electromagnetic – mechanical

$$2. \frac{1}{2} \text{ sec.} = 0.5 \times 10^{-6}$$

3. Optical density – speed of light

4. testosterone – estrogen

- (B) 1. c 2. b 3. c 4. c

(C) 1. third

2. ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{300 \times 1 \times 60}{200} = 90 \text{ gear teeth.}$$

∴ The second gear (which has 90 teeth) produce this sound.

- 2 (A) 1. Longitudinal wave. 2. Receptacle.

3. Musical tone (complex tone).

4. Tissue culture.

- (B) 1. 40 cm. 2. greater than
3. greater than 4. The midpiece.

(C) Periodic time = 4 × time of amplitude
= 4 × 0.5 = 2 sec.

∴ Periodic time

$$= \frac{\text{Time in seconds}}{\text{Number of complete oscillations}}$$

∴ Number of complete oscillations

$$= \frac{\text{Time in seconds}}{\text{Periodic time}} = \frac{100}{2}$$

$$= 50 \text{ complete oscillations}$$

- 3 (A) 1. • The odd word is : Rotary bee.
• The rest words are : From the examples of the oscillatory motion.

2. • The odd word is : Displacement.
• The rest words are : The law of wave propagation.
3. • The odd word is : Grafting.
• The rest words are : Natural vegetative reproduction.
4. • The odd word is : Softness of voice.
• The rest words are : The signs of puberty in male.

(B) 1. (✓) 2. (✗) 3. (✗) 4. (✗)

(C) It is the maximum displacement achieved by the oscillating body away from its rest position.

- 1 (A) 1. If the frequency of an oscillating body is 100 Hz, the periodic time is 0.01 sec.
2. By decreasing the length of the string, the sound becomes sharp.
3. Ultrasonic waves are used in discovery of land mines.
4. The wall of the ovary develops to become pericarp and the ovule develops to become a seed.

(B) 1. Violet > Blue > Green > Yellow > Red.
where, the violet colour has the highest energy but the red colour has the lowest energy.
2. The name of the scientist is : Max planck.
3. Zero (As the reflected light ray from the mirror A falls perpendicular or mirror B).
4. figure (C) < figure (A) < figure (B).
where, figure (C) has the lowest sound pitch but figure (B) has the highest sound pitch.

(C) The scientific basis is : the sound intensity of a musical instrument increases by increasing the surface vibrating area by using are sonance box (hollow wooden box), so the strings of musical instruments are fixed on a hollow wooden box to increase their intensity.

Ismailia Governorate

19 Science Inspectorate

- 1 (A) 1. transverse - compression
2 watt/m^2 - decibel
3. seed - fruit
4 4 - an amplitude.

- (B) 1. • The odd word is : Stamen.
• The rest words are : Parts of the female reproductive organ (gynoecium) in flower.
2. • The odd word is : Sound wave.
• The rest words are : Electromagnetic waves.
3. • The odd word is : Vas deferens.
• The rest words are : Parts of the female reproductive system.
4. • The odd word is : Pollination.
• The rest words are : Artificial vegetative reproduction.

(C) In fig 1 : The angle of reflection = zero.

In fig 2 : The angle of reflection = 60°

2 (A) 1. a 2. a 3. c 4. d

- (B) 1. It protects the inner parts of the flower specially before blooming.
2. It is used to treat sprains and cramps by using hot water and nervous tension by using cold water.
3. They are used to discover land mines.
4. It analysis the white light into 7 spectrum colours.

(C) 1. Periodic time = $\frac{\text{Time in seconds}}{\text{Number of waves}}$
 $= \frac{4}{1} = 4 \text{ sec.}$

2. Wave velocity = $\frac{\text{Distance covered by waves}}{\text{Time in seconds}}$
 $= \frac{4}{4} = 1 \text{ m/sec.}$

- 3 (A) 1. Self (auto) pollination. 2. Wave motion.
3. Opaque medium. 4. Two testes.
(B) 1. Maize flower. 2. Mirage.
3. Water wave. 4. Dolphin or bat.
(C) 1. Because the motion of the oscillating body around its rest point is repeated through equal intervals of time.
2. Because lightning is electromagnetic waves (light waves) but thunderis mechanical waves (sound waves) and the velocity of electromagnetic waves is much greater than that of mechanical waves.

- 4 (A) 1. fundamental 2. progesterone
3. oscillation 4 seven

- (B) 1. It refracts near the normal and the angle of refraction will be smaller than the angle of incidence.
 2. The sound intensity increases by increasing the density of the medium.
 3. They reflect in different (many) directions.
 4. The light intensity increases by decreasing the distance between the source of light and a surface according to the inverse square law of light ($I \propto \frac{1}{d^2}$).

(C) 1. Time = $2 \times 60 = 120$ sec.

2. Sound frequency (F) =

$$\frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}} = \frac{960 \times 30}{120} = 240 \text{ Hz.}$$

Suez Governorate

20 Science Inspectorate

- 1 (A) 1. Sonic waves. 2. Angle of emergence.
 3. Crest.

(B) 1. (✓) 2. (✗)

(C) ∴ Wave velocity

$$= \text{Wavelength} \times \text{Frequency}$$

∴ Frequency = 10000 Hz.

$$\therefore \text{Wavelength} = \frac{\text{Wave velocity}}{\text{Frequency}} = \frac{1500}{10000} = 0.15 \text{ metre}$$

- 2 (A) 1. Because dolphins produce ultrasonic waves which have frequencies more than 20000 Hz and the man can hear sonic waves only which have frequencies from 20 to 20000 Hz.
 2. Because water is a transparent medium of higher optical density than air.
 3. To adhere on the insect's body.
 4. Because frequency is inversely proportional to the periodic time and the periodic time is the reciprocal of the frequency (periodic = $\frac{1}{\text{Frequency}}$).

(B) 1. Look at the notebook on page (96).

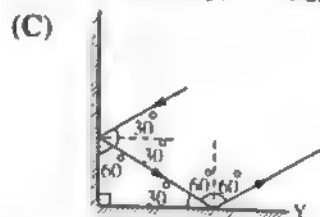
2. Look at the notebook on page (78).

(C) 1. Male flower.

2. Bisexual (Hermaphrodite) flower.

- 3 (A) 1. the nucleus of the male gamete – the nucleus of the female gamete – 46
 2. light refraction.
 3. increase the vibrating surface area and sound intensity.
 4. hertz.
 5. head – tail.

- (B) 1. It analysis the white light into 7 spectrum colours.
 2. It is used to determine the sound pitch (frequency) of an unknown tone.



The angle of reflection on the mirror $y = 60^\circ$

- 4 (A) 1. a 2. a 3. b 4. c

- (B) 1. It means that the distance between the centres of 2 successive compressions or rarefactions of a sound longitudinal wave = 3 cm.

2. It means that the ratio between the velocity of light in air to the velocity of light through glass = 1.5

(C) ∴ Sound frequency (F) =

$$\frac{\text{Number of cycles (rotations)} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of cycles (rotations) =

$$\frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of gear teeth}}$$

$$= \frac{300 \times 2 \times 60}{100} = 360 \text{ cycles (rotations).}$$

Port Said Governorate

21 Science Inspectorate

- 1 (A) 1. electromagnetic transverse – mechanical longitudinal
 2. four – an amplitude.
 3. uniform – non uniform
 4. floral – bract.

(B) 1. periodic (oscillatory) 2. sepals.
 3. placenta 4. fruit.

(C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

$$\therefore \text{Number of gear teeth} = \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth.}$$

- 1 (A) 1. • The odd word is : Rotary bee motion.
 • The other words are : Examples of the oscillatory motion.
 2. • The odd words is : Stamen.
 • The other words are : Parts of the female reproductive organ (gynoecium) of the flower.
 3. • The odd word is : Frequency.
 • The other words are : The factors affect on the sound intensity.
 4. • The odd word is : Pollination.
 • The other words are : Artificial vegetative reproduction' ways.

(B) 1. (x) 2. (✓) 3. (x) 4. (✓)

(C) \therefore The law of wave propagation is :

Wave velocity (V)

$$= \text{Wavelength } (\lambda) \times \text{Frequency (F)}$$

$$\text{Wavelength} = \frac{\text{Distance covered by waves}}{\text{Number of waves}}$$

$$= \frac{2}{1} = 2 \text{ m.}$$

$$\text{Frequency} = \frac{\text{Number of waves}}{\text{Time in seconds}} = \frac{\frac{1}{2}}{2} = \frac{1}{4} \text{ Hz.}$$

\therefore Wave velocity (speed) (V) =

$$2 \times \frac{1}{4} = \frac{1}{2} \text{ m/sec.}$$

1 (A) 1. d 2. b 3. b 4. a

- (B) 1. The periodic time = 4 \times the time of the amplitude = 4 \times 0.5 = 2 sec.
 2. The angle of reflection = the angle of incidence = zero.
 3 • The colour (1) is the red colour.
 • The colour (2) is the violet colour.
 4. The anther.

(C) A transverse wave is formed which consists of crests and troughs.

- 1 (A) 1. Frequency. 2. Harmonic tones.
 3 Light intensity.
 4 Fertilization process.

Answers of Final Examination

(B) 1. d 2. c 3. a 4. b

(C)

	High-pitched sound	Low pitched-sound
Frequency	It has high frequency	It has low frequency
Example	• Voice of woman • Voice of sparrow	• Voice of man • Voice of lion

El-Bhaira Governorate

22 Science Inspectorate

- 1 (A) 1. transverse – compression
 2. Hertz – second. 3. Red – violet
 4. seed – fruit.

(B) 1. Motion of rotary bee.

2. Ovary.

3. Anther.

4. Tuber.

(C) \therefore The absolute refractive index

$$= \frac{\text{Speed of light in air}}{\text{Speed of light in diamond}}$$

\therefore The speed of light in diamond

$$= \frac{\text{Speed of light in air}}{\text{Absolute refractive index}} = \frac{3 \times 10^8}{2.4} = 125 \times 10^6 \text{ m/sec.}$$

2 (A) 1. c 2. b 3. b 4. a

(B) 1. 4

2. violet

3. Sonic

4. Androecium

(C) Look at the notebook page (78).

- 3 (A) 1. Periodic motion. 2. Mirage.
 3. Syphilis. 4. Tissue culture.

(B) 1. c 2. c 3. a 4. d

(C) 1. Amplitude = 3 m.

$$2. \text{Wavelength} = \frac{\text{Distance covered by waves}}{\text{Number of waves}} = \frac{4}{2} = 2 \text{ m.}$$

$$3. \text{Frequency} = \frac{\text{Number of waves}}{\text{Time in seconds}} = \frac{1}{0.2} = 2.5 \text{ Hz.}$$

$$4. \text{Wave velocity} = \text{Wavelength} \times \text{Frequency} = 2 \times 2.5 = 5 \text{ m sec.}$$

- 1 (A) 1. Red < yellow < Green < Blue.
Where, Red has the lowest energy and blue has the highest energy.
2. Wood > Water > Carbon dioxide > air.
Where, the velocity of sound in wood is the highest but the velocity of sound in air is the lowest.
3. Calyx – Corolla – Stamen – Carpel.
4. Air < Water < Glass < Diamond.
Where, Air has the lowest optical density but the diamond has the highest optical density.

(B) a. 70° b. The angle of refraction.

(C) Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

$$= \frac{480 \times 30}{1 \times 60} = 240 \text{ Hz.}$$

El-Menia Governorate

23 Deirwas official school for Lang.

1 (A) 1. d 2. c 3. d 4. b

(B) 1. Calyx 2. Crest
3. reflection 4. mitochondria

- (C) 1. They are transverse waves because the medium particles vibrate perpendicular to the direction of wave propagation forming crests and troughs and mechanical waves because they need a medium to propagate through.
2. Because they have high ability to kill some types of bacteria and stop the action of some viruses.

2 (A) 1. Self (auto) pollination.
2. Light intensity. 3. Amplitude.
4. Optical density.

(B) 1. (✓) 2. (✗) 3. (✗) 4. (✓)

- (C) 1. It is the fusion of the nucleus of the male gamete (sperm) with the nucleus of the female gamete (ovum) to form a fertilized ovum (zygote).
2. It is the area in the longitudinal wave at which the medium particles are of the lowest density and pressure.

- 3 (A) 1. electromagnetic – mechanical waves
2. 4 – an amplitude.
3. testosterone – estrogen
4. refraction – the normal

(B) 1. White. 2. Rotary bee motion
3. Pollination. 4. Measles.

- (C) 1. It analysis the white light into 7 spectrum colours.
2. It stores the sperms.

4 (A) 1. c 2. d 3. a 4. b

(B) 1. Anther. 2. Corolla (petal).
3. Calyx (sepal).
4. bisexual (hermaphrodite) flower.

(C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth.}$$

Assiut Governorate

24 Science Inspectorate

- 1 (A) 1. electromagnetic – mechanical
2. refraction – the normal
3. testosterone – estrogen
4. transverse – compression

- (B) 1. • The odd words is : White.
• The remaining words are : Spectrum colours
2. • The odd word is : Pollination.
• The remaining words are : Artificial vegetative reproduction.
3. • The odd word is : Sound wave.
• The remaining words are : Electromagnetic waves.
4. • The odd word is : Stamen.
• The remaining words are : Parts of the female reproductive organ of the flower (gynoecium).

Qena Governorate

25 Science Inspectorate

- (C) 1. Because lightning is electromagnetic waves (light waves) and thunder is mechanical waves (sound waves) and the velocity of the electromagnetic waves is much greater than that of mechanical waves.
2. Due to refraction and reflection of light in air layers which differ in the degree of temperature.

- 1 (A) 1. straight 2. potatoes.
3. solid. 4. higher

- (B) 1. c 2. c

- (C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth.}$$

- 3 (A) 1. Light refraction. 2. Tissue culture.
3. Frequency. 4. Flower.

- (B) 1. (✓) 2. (✗) 3. (✗) 4. (✓)

- (C) 1. It means that the ratio between the velocity of light through air to that through water = 1.33

2. It means that the distance between the centres of two successive compressions or rarefactions of a sound wave = 30 cm.

- 1 (A) 1. b 2. c 3. d 4. a

- (B) 1. Anther.

2. Feathery like stigmas.

4. • Anthers are hanged to be easily opened by air.

- Stigmas are feathery like and sticky to catch pollen grains from air.

- (C) - Longitudinal waves :

The disturbance in which the particles of the medium vibrate along the direction of wave propagation.

- Transverse waves :

The disturbance in which the particles of the medium vibrate perpendicular to the direction of wave propagation

- 1 (A) 1. transverse 2. violet

3. fruit. 4. watt/m².

- (B) 1. Rotary bee motion. 2. Filament.

3. Thyroid gland. 4. Wood.

- (C) Because they have high ability to kill some types of bacteria and stop the action of some viruses.

- 2 (A) 1. Amplitude. 2. Light refraction.

3. Fertilized ovum (Zygote).

4. Estrogen.

- (B) 1. greater than 2. 20 : 20000

3. potatoes. 4. 6

- (C) It is the time taken by an oscillating body to make one complete oscillation.

- 3 (A) 1. c 2. c 3. a 4. c

- (B)

P.O.C	Mechanical Waves	Electromagnetic Waves
Definition :	They are waves which need a medium to propagate, where they do not propagate through vacuum.	They are waves which do not need a medium to propagate, where they propagate through vacuum.
Example :	• Water waves. • Sound waves.	• Visible light waves. • Infrared waves. • Radio waves.

- (C) ∴ Sound frequency (F)

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$

∴ Number of gear teeth

$$= \frac{\text{Sound frequency (F)} \times \text{Time in seconds}}{\text{Number of cycles}}$$

$$= \frac{600 \times 1 \times 60}{300} = 120 \text{ gear teeth.}$$

- 4 (A) 1 (✓) 2. (✓) 3. (✗) 4 (✓)

- (B) 1. Maize plant.

3. Mirage.

- (C) It will reflect on itself.

Answer the following questions :

Question 1

A Complete the following statements :

1. The reflection of light is classified into two types which are and
2. Fertilization is the process of fusion of the male cell nucleus with nucleus to form
3. Waves are classified according to the ability to propagate and transfer energy into and
4. If the angle between the incident light ray and the reflecting surface is 25° , so the angle of reflection =
5. The hormone is responsible for the appearance of secondary sexual characteristics in female.

B Write the scientific term :

1. They are sound waves of frequencies less than 20 Hz.
2. The maximum displacement done by the oscillating body away from its original position.
3. The distance covered by light in one second.
4. The time taken by the oscillating body to make one complete oscillation.
5. The outer whorl of floral leaves which consists of a group of green leaves.
6. The highest point in the transverse wave.
7. The change of light ray path when it travels from a transparent medium to another transparent medium of different optical density.

Question 2

A What's meant by ... ?

1. Sound pitch.
2. The wave.
3. Pollination in flower.
4. The oscillating body makes 200 oscillations in 2 minutes.
5. Light reflection.

B Correct the underlined words :

1. Angle of refraction = angle of reflection.
2. Human ear can distinguish between sounds of frequencies ranging between 10 : 20000 Hz.
3. Ovule consists of stigma, style and ovary.
4. Particles of the medium vibrate along the direction of the wave propagation in the transverse wave.

Question 3

1. What happens when ... ?

1. The sound wave travels from wood to water (concerning its velocity).
2. A pollen grain falls on the stigma of a flower.
3. A light ray falls perpendicular on a reflecting surface.
4. The oscillating body passes its rest position during its movement (concerning its velocity).

2. Give reasons for :

1. Sound travels in air with less intensity than its travelling in carbon dioxide gas.
2. The palm flower is unisexual.
3. The motion of the rotary bee is considered as a periodic motion, but it is not an oscillatory motion.
4. Light can travel through free space.
5. The petals of corolla are colourful and scented.
6. Man can't reproduce asexually.

Question 4

1. Compare between :

Transverse wave and longitudinal wave (definition, structure and examples).

2. Savart's wheel rotates with a rate of 300 cycles per minute. A sound of frequency 600 Hz is produced when a metallic plate touches the teeth of gear. Calculate the number of the gear teeth.

2 Cairo Governorate

Basateen & Dar Al-Salam Educational
Administration

Answer the following questions :

Question 1

1. Choose the correct answer :

1. The result of multiplying the frequency of an oscillating body by its periodic time equals

a. $\frac{1}{2}$

b. $\frac{1}{4}$

c. $\frac{1}{3}$

d. 1

2. Kinetic energy = $\frac{1}{2} \times$

a. m/v^2

b. mv^2

c. m^2v^2

d. mv^3

3. Radio waves

- a. are transverse mechanical waves.
c. propagate through vacuum.

b. are longitudinal waves.

d. need a medium to propagate through.

4. The graph represents the relation between frequency and wavelength for a wave which moves in the same medium.



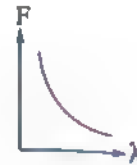
a.



b.



c.



d.

5. The energy of green photon is the energy of yellow photon.

a. greater than

b. equal to

c. less than

d. no correct answer

6. If the distance between a surface and a light source decreases to its half, the light intensity of the surface

a. decreases to its own fourth.

b. decreases to its half.

c. increases twice.

d. increases four times.

7. The sound of frequency 200 Hz is than the sound of frequency 100 Hz.

a. stronger

b. sharper

c. weaker

d. harsher

8. Doctors use waves, which have frequency to break down kidney and ureters stones.

a. less than 20 Hz

b. equal to 20 Hz

c. more than 20 KHz

d. 15 KHz

9. If the angle between the incident light ray and the reflected light ray is 90° , so the angle of reflection will be equal

a. 0°

b. 30°

c. 45°

d. 90°

10. produces pollen grains.

a. Carpel

b. Style

c. Stamen

d. Petal

11. is an example of plants which reproduce asexually by tuber.

a. Maize

b. Pumpkin

c. Palm

d. Potato

12. The ovary of the flower contains one ovule.

a. olive

b. tomato

c. bean

d. pea

B Savart's wheel rotates with a rate 300 cycles per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear, calculate the number of teeth of the gear.

Question 2

A What is meant by ... ?

1. The wavelength of a sound wave = 30 cm.

2. The angle of reflection of a light ray equals 45°

① Cross the odd word out, then write the scientific term of the rest :

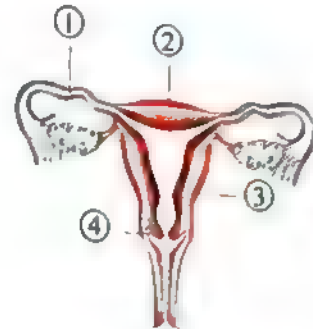
1. Pendulum motion / Spring motion / Rotary bee motion / Stretched string motion.
2. Sound wave / Light wave / Radio wave / Infrared wave.
3. Milk / Cotton / Air / Human skin.
4. Tulip / Petunia / Wallflower / Palms.
5. Androecium / Calyx / Corolla / Root.

② These are values of absolute refractive index of five substances :
(1.5 - 0.8 - 1.8 - 1.2 - 1.3)

Which of them is wrong ? Why ?

③ In the opposite figure :

1. Write the labels from no. ① to ④.
2. What is the function of no. ② ?



Question 3

① Write the scientific term :

1. The reproduction of some plants by parts of the root, stem or leaves.
2. The cell resulting from the fusion of the pollen grain and the ovum nuclei.
3. The ability of the medium to refract light.
4. The reflection in which light rays recoil in many different directions when falling on the rough surface.
5. The amount of light that falling perpendicular to a unit area of a surface in one second.
6. The maximum displacement of the medium particles away from their rest points.
7. The property of sound by which the human ear can distinguish between sharp and harsh sounds.
8. The number of complete oscillations produced by the oscillating body in one second.

② From the opposite figure, choose the correct answer :

1. The periodic time =

- | | |
|--------------|-------------|
| a. 0.02 sec. | b. 0.4 sec. |
| c. 0.04 sec. | d. 0.4 m. |

2. Frequency =

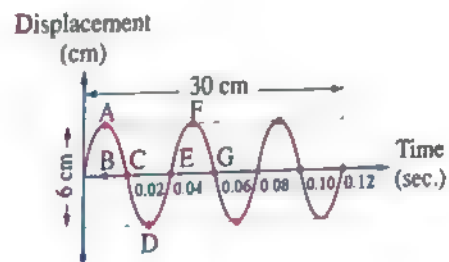
- | | |
|-------------|-----------|
| a. 0.04 Hz. | b. 25 Hz. |
| c. 2.5 Hz. | d. 0.5 m. |

3. The amplitude =

- | | | | |
|-------------|-------------|----------|----------|
| a. 0.2 sec. | b. 0.4 sec. | c. 6 cm. | d. 3 cm. |
|-------------|-------------|----------|----------|

4. Number of complete oscillations is

- | | | | |
|------|------|-------------------|------|
| a. 1 | b. 3 | c. $2\frac{1}{2}$ | d. 4 |
|------|------|-------------------|------|



C Which of the following flowers can't form fruits and why ?



(1)



(2)



(3)

Question 4

A Complete the following sentences :

1. The velocity of the oscillating body reaches its value when it passes its rest position.
2. Transverse wave consists of and
3. The human ears can't detect the sound waves of frequencies less than and that of frequencies more than
4. The fundamental tone has lower and higher than the harmonic tones.
5. The ratio between frequency of red photon to the frequency of violet photon is than one.
6. When light travels from a medium of optical density to another of optical density, it refracts far from the normal line.
7. Types of pollination are and

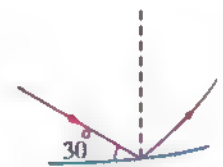
B Calculate the absolute refractive index of diamond given that the velocity of light through it is 1.25×10^8 m/s, knowing that the velocity of light through air is 3×10^8 m/s.

C Give reasons for :

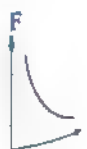
1. Auto pollination can't happen in sunflower.
2. The light ray that falls perpendicular on a reflecting surface, reflects on itself.
3. The energy of red light photon is less than the energy of violet light photon.
4. The use of ultrasonic waves in milk sterilization.

D Look at the following figures, then complete :

1. Angle of reflection =



2. The relation between frequency and periodic time is relation.



Answer the following questions :

Question 1

① Complete the following statements :

1. Absolute refractive index is the ratio between to
2. Angle of is the angle between the refracted light ray and
3. The measuring unit of noise intensity is, while the measuring unit of the periodic time is
4. The crest in the wave is equivalent to the in the longitudinal wave.

② Write one function for each of the following :

1. The glass prism.
2. Ultrasonic waves.
3. Jacuzzi.
4. Ear plugs.

③ Correct the underlined words :

1. The angle of incident of a light ray is greater than the angle of reflection.
2. The fish is seen higher than its real position due to total internal reflection.
3. Oscillatory motion is the motion that is repeated regularly in equal periods of time.
4. Bract is a group of flowers arranged on the same axle.
5. Ovaries produce sperms and male hormone.

Question 2

① Write the scientific term :

1. A new method to produce large numbers of plants from a small part of it.
2. The ability of the medium to refract light ray.
3. It is the motion produced as a result of the vibration of the particles of the medium in a certain moment and in a definite direction.
4. It is an external stimulus that affects the ear and causes hearing.
5. The process of transfer pollen grains from the flower anther to the stigma.
6. A phenomenon that appears on the desert at noon especially in summer.
7. A tool is used to determine the pitch of an unknown tone.
8. A group of green leaves each of them is called sepal.

② Give reasons for :

1. Olive fruit contains only one seed, while bean fruit contains more than one seed.

2. When a light ray is incident perpendicular to the reflecting surface, it reflects on itself.
 3. The waves produced due to vibration of strings are transverse mechanical waves.
 4. The fallopian tubes are lined with cilia.
- C** Savart's wheel rotates with a rate of 300 cycles per minute, a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of one gear, calculate the number of teeth of the gear.

Question 3

A Compare between :

Androecium and gynoecium. (two points only)

B What is meant by ... ?

1. The wavelength of a sound wave is 25 cm.
2. Amplitude.
3. Sound intensity.

C Choose the correct answer :

1. The result of multiplying the frequency by its periodic time equals
 a. 0.5 b. 0.01 c. 1 d. 0.1
2. Doctors use waves of a frequency to break down kidney and ureter stones.
 a. more than 20 Hz b. less than 20 KHz
 c. 20 Hz d. more than 20 KHz
3. The produced fruit by grafting belongs to the type of the
 a. scion. b. cut. c. stock. d. bud.
4. The human skin is considered as a/an medium.
 a. transparent b. opaque c. translucent d. no correct answer
5. Fertilization occurs when is formed.
 a. embryo b. zygote c. ovum d. corolla
6. Plank's constant = the photon energy divided by photon
 a. frequency. b. density. c. wavelength. d. amplitude.
7. A pencil seems broken when it is placed in a glass cup of water due to of light.
 a. critical angle b. reflection c. rarefaction d. refraction

Question 4

A Put (✓) or (✗) and correct the wrong ones :

1. The pendulum motion is an example of wave motion. ()

2. The typical flower contains three whorls.
3. After fertilization, the ovary develops to become a flower.
4. Bats, dogs and dolphins can hear ultrasonic waves.
5. Drill is an example of the musical tones.

()
()
()
()

① What are the factors affecting the sound intensity ? (three points only)

② From the opposite figure, answer the questions :

1. Write the labels on it.
2. Mention the sex of the flower.



4 Cairo Governorate

Abdeen Educational Directorate
Patriarchal College

Answer the following questions :

Question 1

① Complete the following statements :

1. In the transverse wave, the particles of the medium vibrate the direction of wave propagation.
2. In the flower, the corolla consists of coloured leaves, each leaf is called
3. The complete oscillation includes successive displacements, each of them is called
4. The ratio between the velocity of light through air to the velocity of light through another transparent medium is known as
5. The angle of is the angle between the refracted light ray and the at the point of incidence on the separating surface.
6. The outer whorl of the flower is the and it consists of leaves called

② What happens when ... ?

1. Fertilization process is completed (concerning the ovary and the ovule of the flower).
2. The frequency of a wave is doubled (concerning the wavelength) when the wave velocity is constant.
3. A light ray falls perpendicular on a reflecting surface.
4. Incidence of a white light ray on one face of a triangular glass prism.

③ If the absolute refractive index of water is $\frac{4}{3}$ and the velocity of light through water is 2.25×10^8 m/sec., calculate the velocity of light through air.

Question 2**A Write the scientific term :**

1. The ability of the medium to refract light.
2. The flower which contains both androecium and gynoecium.
3. The motion produced as a result of the vibration of the particles of the medium at a certain moment in a definite direction.
4. The motion of an oscillating body when it passes by a fixed point on its path two successive times in the same direction.
5. They are sound waves of frequencies less than 20 Hz.
6. The characteristic by which the human ear can distinguish between sounds from different sources even if they are equal in intensity and pitch.

B What's meant by ... ?

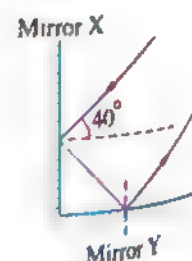
1. The oscillating body makes 540 oscillations in a minute and a half.
2. Fertilization process.
3. Mirage phenomenon.
4. Harmonic tones.

C Mention the mathematical relation between :

1. Periodic time and number of complete oscillations made by an oscillating body in a certain time.
2. Sound intensity and the distance between the ear and the sound source.

Question 3**A Give reasons for :**

1. Pea fruit contains more than one seed.
2. Wood doesn't allow the passage of light through it.
3. Man sometimes has to pollinate palm trees.
4. Stigmas of some flowers are feathery like and sticky.

B Two sound waves, the first of wavelength 1.7 m and the other wave of wavelength 20 m. If the velocity of sound through air is 340 m/sec., which of the two waves is audible and which is non-audible ? Why ?**C According to the opposite figure, calculate the angle of reflection of the ray falls on mirror (Y).****Question 4****A Compare between each of the following :**

1. The difference between auto pollination and self pollination (concerning definition and reasons).

2. The frequency and periodic time (concerning definition and the rule).
3. Mechanical waves and electromagnetic waves (concerning definition and speed).

1. Pollination in coloured flowers takes place by

7. sound velocity is measured in
a. insects. b. man.
c. water. d. air.

2. The sound velocity is measured in
a. insects. b. m/sec. c. water. d. air.

- a. Hertz b. m/sec. c. decibel
The pollen tube contains d. metre

3. The pollen tube contains
 a. two male nuclei only. b. two male nuclei c. one male nucleus d. metre

- a. two male nuclei only.
b. two male nuclei and one tube nucleus.
c. two male nuclei and two tube nuclei.
d. one male nucleus and one tube nucleus.

- c. two male nuclei and two tube nuclei. d. one male nucleus and two tube nuclei.

4. The maximum displacement made by the oscillating body away from its original position is

- a. amplitude. b. frequency. c. periodic time. d. complete oscillation.

5. The distance between two successive troughs or two successive crests in the transverse wave is called _____.

5. The distance between two successive troughs or two successive crests in the transverse wave is
a. wavelength b. amplitude c. frequency

1. The wavelength is the distance between points

2. The amplitude of the wave is the distance between the points or

3. What is the frequency of this wave if it takes 0.2 sec. to make one complete wave?



Answer the questions :

- 1. Label the numbers.**

2. What is the function of number ③ ?



Heliopolis Educational Zone
Patriarchal College

Answer the following questions :

Complete the following statements :

1. Sharp tones have frequencies, while rough tones have frequencies.

2. The crest in the wave is equivalent to the in the longitudinal wave.

3. is the male reproductive organ in the plant, while is the female reproductive organ in the plant.

4. Harmonic tones are lower in and higher in than fundamental tones.

10 Give a reason for each of the following :

1. Vegetative reproduction is considered asexual reproduction.
2. The periodic time decreases as the number of complete oscillations increases.
3. The pen seems broken when it is put in a glass of water.
4. The use of ultrasonic waves in milk sterilization.

11 Sound waves of frequency 400 Hz in air and wavelength 85 cm, calculate the velocity of these waves.

Question 2

A Write the scientific term of each of the following :

1. Short stem where the leaves are developed and modified into reproductive organs.
2. The measuring unit of noise intensity.
3. It is a disturbance in which the particles of the medium vibrate along the direction of wave propagation.
4. The flower that has four whorls.
5. The fusion of one of the male nuclei with the ovum.

B Compare between each of the following :

1. Mechanical waves and electromagnetic waves.
2. Grafting by attachment and grafting by wedge.

C Define :

1. The wavelength of longitudinal wave.
2. Amplitude.

D Choose the correct answer :

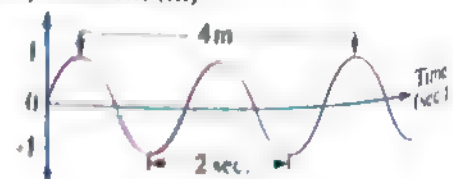
1. If the frequency of red colour is 4×10^{12} Hz, so the frequency of the violet colour is $\times 10^{12}$ Hz.
a. 1.5 b. 3.5 c. 4 d. 7.5
2. The human skin is considered as a/an medium.
a. transparent b. opaque c. translucent d. no correct answer
3. If the light speed in air is higher than that in another transparent medium, so the refractive index is
a. zero b. 1 c. more than 1 d. less than 1
4. The periodic time of a tuning fork which produces 240 vibrations in one minute is equal
a. 1 sec. b. 4 sec. c. 0.5 sec. d. 0.25 sec.
5. All of the following are parts of female reproductive system except
a. vas deferens. b. uterus. c. ovary. d. fallopian tube.

Question 3

A From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.

Displacement (m)



Q What is meant by ... ?

1. Angle of incidence of a light ray = 30°

2. The number of complete oscillations made by an oscillating body in 10 seconds is 300 complete oscillations.

3. Mixed pollination.

Q Mention the importance of each of the following :

1. Calyx in flower.

2. Savart's wheel.

3. Ear plugs.

Q Mention only one difference between :

1. Light reflection and refraction.

2. Natural vegetative reproduction and artificial vegetative reproduction.

Question 4

Q If the frequency of the sound produced when a metallic plate touches a gear in Savart's wheel is 100 Hz, calculate the number of the gear teeth if the wheel rotates with speed 200 cycles/minute.

Q What happens when ... ?

1. Decreasing the amplitude of the sound source to its half (concerning the sound intensity).

2. A pollen grain falls on a stigma.

3. The seminal fluid is not alkaline.

Q Correct the underlined words in the following statements :

1. The produced tone from a tuning fork is called complicated tone.

2. The measuring unit of sound intensity is m/sec.

3. Growing prevents living organisms from extinction.

4. Rainbow phenomenon takes place on desert roads at noon specially in summer.

5. Each stamen consists of stigma, style and ovary.

6. Coloured sepals attract insects for pollination.

Q From the opposite figure answer the following :

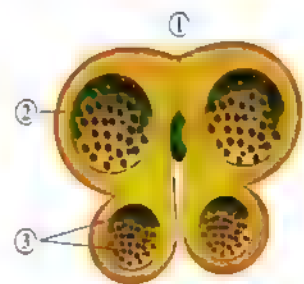
1. This figure represents a cross section in an

2. Label the figure.

Q What does each relationship indicate ?

1. $\frac{\text{Velocity of wave propagation}}{\text{Wave frequency}}$

2. $\text{Planck's constant} \times \text{Photon frequency}$



6 Cairo Governorate

East Nasr City Educational Zone
El Seddeek Language School

Answer the following questions :

Question 1

A Write the scientific term :

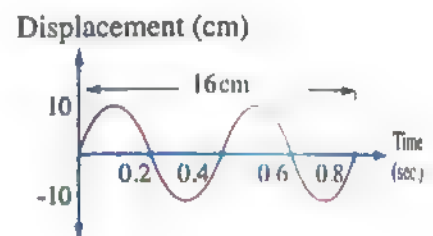
1. The distance covered by the wave in one second.
2. A short stem whose leaves are modified to achieve reproduction in plant.
3. Non-audible waves whose frequencies are less than 20 Hz.
4. Maximum displacement of the oscillating body away from its rest position.
5. A natural phenomenon that occurs on desert roads at noon where objects seem as if they have inverted images over water surface.
6. The transfer of pollen grains from the anthers of a flower to the stigmas of another flower of the same kind.

B Mention the importance of :

1. Ultrasonic waves in military field.
2. Calyx of the flower.

C From the opposite figure, calculate :

1. The amplitude.
2. Periodic time.
3. The frequency.
4. Wave velocity.



Question 2

A Choose the correct answer :

1. If the distance between the centre of the fifth compression and the centre of the ninth compression of a longitudinal wave is 4 m, then the wavelength of this wave is
a. 9 m. b. 1.2 m. c. 1.5 m. d. 1 m.
2. The measuring unit of noise intensity is
a. decibel. b. Hz. c. watt/m². d. metre.
3. All of the following plants reproduce sexually except
a. bean plant. b. pea plant. c. potato. d. olive plant.
4. When the distance between the sound source and the ear is doubled, the sound intensity
a. decreases to its half. b. increases twice.
c. decreases to its quarter. d. increases four times.
5. The male reproductive organ in the flower is
a. gynoecium. b. corolla. c. calyx. d. androecium.

6. Two gears of Savart's wheel rotate at a same velocity, if the number of teeth of the first gear is 90 teeth and the number of the second is 60 teeth, then the ratio between their frequencies is
- a. 1 : 2 b. 3 : 2 c. 2 : 1 d. 5 : 2
7. Artificial vegetative reproduction by cutting can be done in
- a. peach. b. palm. c. grapes. d. olive.
8. If a light ray falls from water to air with an angle of incidence 35° , then the angle of refraction will be
- a. 47.5° b. 35° c. 28.5° d. 29.5°

9. What happens in the following cases ... ?

1. The pollen grain combines with the egg cell of the ovule of a plant.
 2. The frequency of an oscillating body increases (concerning its periodic time).
10. A gear of Savart's wheel rotates 60 cycles in half minute, If the frequency of the sound produced is 200 Hz, calculate the number of teeth of that gear.

Question 3

1. Give reasons for :

1. The sound is heard from all directions that surround the sound source.
2. The refractive index of diamond is greater than one.
3. Palm flower is unisexual.
4. The oscillatory motion is considered as a periodic motion.
5. We see lightning before hearing thunder.
6. The presence of the testes in human male outside the body in the scrotal sac.

2. What is meant by ... ?

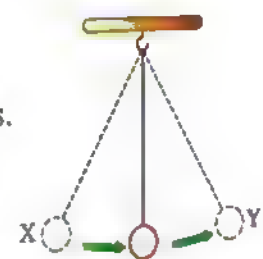
1. Complete oscillation.
2. Fertilization.
3. Ultrasonic waves.
4. Regular reflection of light.

3. If the absolute refractive index of water is 1.333, calculate the light speed through water, given that the light speed through air is 3×10^8 m/s.

Question 4

1. Complete the following statements :

1. waves are used in breaking the stones of kidneys and ureters.
2. When the opposite oscillating body covers the distance from (X) to (Y) in 0.2 second so its periodic time = sec.
3. Light is waves but sound is waves.
4. is a transparent medium of light but wood is a(an) medium.
5. The ovule inside the ovary is converted into after fertilization.
6. Each ovary produces one ripe ovum every days in exchange with the other ovary.



B Put (✓) or (x) :

1. The energy of light = Constant \times Wavelength. (✓)
2. When shooting a bullet at the top of a mountain then shooting at the base, the intensity at the top of the mountain is less than that at its base. (x)
3. Androecium in the flower is responsible for producing pollen grains. (✓)

C Compare between each of the following :

1. Red light and violet light (according to their energy).
2. Longitudinal wave and transverse wave (according to the vibration of particles only)

7**Giza Governorate**6th of October Directorate

Answer the following questions :

Question 1**A Choose the correct answer :**

1. All of the following are factors affecting sound intensity except
 a. amplitude of vibration. b. frequency.
 c. medium density. d. wind direction.
2. A medium that prevents light to pass through it is medium.
 a. transparent b. translucent c. opaque d. no correct answer
3. The submerged object in water as a fish is seen in an apparent position slightly above its real position due to of the light rays.
 a. refraction b. reflection c. analysis d. total internal reflection
4. Reproduction by is used only between plants of highly similar to each other, like orange and naring.
 a. cutting b. grafting c. tissue culture d. tubers
5. From the methods of cross pollination is
 a. air. b. insects. c. human. d. all of them.
6. White light analyzes into spectrum colours.
 a. 3 b. 5 c. 7 d. 9
7. The result of multiplying frequency of an oscillating body by its periodic time equals .
 a. variable value. b. negative value. c. constant value. d. one.
8. The measuring unit of wave velocity is
 a. metre. b. metre/sec. c. Hz. d. sec.
9. The motion resulting from the vibration of the medium particles at a certain moment in a specific direction is called motion.
 a. oscillatory b. wave c. transitional d. circular

Q Mention the sex of each of the following flowers :

Final Examinations



(a)



(b)



(c)

Q Calculate the frequency of an oscillating body that makes 300 complete oscillations in 100 seconds.

Question 2

Q Correct the underlined words in the following statements :

1. Sonic waves are used in sterilization of milk.
2. From the types of natural vegetative reproduction is tissue culture.
3. Frequency of infrasonic waves is less than 2000 Hz.
4. White light travels in curved lines.
5. If the distance between the first crest and the second crest on the wave propagation is 10 cm, then the wavelength of this wave is 20 cm.
6. The movement of the clock pendulum is an example of wave motion.

Q Calculate the number of the gear teeth if Savart's wheel rotates with a velocity of 300 cycles in one minute, given that the frequency is 100 Hz.

Q Give reasons for :

1. We see lightning before hearing thunder.
2. The quantum of energy of violet light is greater than the quantum of energy of red light.
3. Flowers pollinated by insects produce coarse pollen grains.
4. The sperm has a long and thin tail.

Question 3

Q Complete the following statements :

1. Waves are classified according to the ability to propagate and transfer energy into and waves.
2. Complete oscillation consists of displacements (amplitudes).
3. Max Planck proved that the energy of light wave consists of energy quanta known as

4. Reflection of light is classified into two types which are and
 reflection.

5. The absolute refractive index of any medium is a ratio between the velocity of light through to the velocity of light through
 through.

6. The calyx of the flower consists of green leaves called

7. Stamen consists of anther and

8. The hormone in males is responsible for the appearance of secondary sex characters.

B What happens to each of the following after fertilization ... ?
 1. Ovary. 2. Ovule.

C Compare between longitudinal wave and transverse wave. (one point only).

Question 4

A Write the scientific term :

1. The maximum displacement done by an oscillating body away from its rest position.

2. The periodic motion of an oscillating body around its rest point, where the motion is repeated through equal intervals of time.

3. Waves that need medium to travel and can't travel in space.

4. A property by which the human ear can distinguish between strong and weak sound.

5. Rebounding of light waves in the same medium due to meeting a reflecting surface.

6. Light intensity of a surface is inversely proportional to the square of the distance between the surface and the source of light.

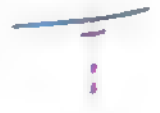
7. An angle between the incident light ray and the normal at the point of incidence on the interface.

8. The transfer of pollen grains from the anther of a flower to the stigma of the same flower.

B In this figure, find :

1. Angle of incidence.

2. Angle of reflection.



C What is meant by ... ?

1. Periodic time.

2. Fertilization.

Answer the following questions :

Question 1

A Complete the following :

1. The measuring unit of sound intensity is , while that of noise intensity is
2. The cell produced from the fusion of pollen grain with the ovum nuclei is called
3. The crest in the wave is equivalent to the in the longitudinal wave.
4. Sound is the property by which the ear can distinguish between harsh and sharp sounds.
5. The frequency of sonic waves ranges between Hz to Hz.
6. The sound intensity is inversely proportional to , while sound pitch is directly proportional to

B Compare between the following :

1. Mechanical waves and electromagnetic waves (concerning the medium).
2. Self pollination and mixed pollination.

Question 2

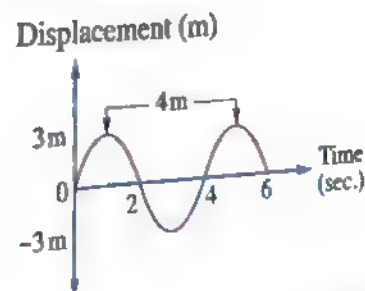
A Write the scientific term :

1. A disturbance that propagates and transfers energy along the direction of propagation.
2. The maximum displacement that is done by a vibrating body away from its original position.
3. A short stem where leaves are modified to perform reproduction.
4. The angle between the emergent light ray and the normal.
5. Distance covered by the wave in one second.
6. Angle of incidence = Angle of reflection.

B Savart's wheel has a metallic plate with a gear having 40 teeth, if the time taken by the wheel to make 400 rotations is 4 seconds, find its frequency.

C From the opposite figure, find :

1. Amplitude.
2. Periodic time.
3. Frequency.
4. Wavelength.
5. Wave velocity.
6. Type of this wave.



Question 3

A Choose the correct answer :

- The doctors use waves with a frequency to break down kidney stones.
a. less than 20 Hz b. 20 Hz c. more than 20 KHz
- Sound intensity in air is that in carbon dioxide.
a. less than b. more than c. equal to
- The absolute refractive index of any material is always one.
a. less than b. more than c. equal
- In reflection, the reflected rays are reflected in many directions.
a. uniform b. irregular c. both (a) and (b)
- The periodic time of a source that makes 540 oscillations/minute is equal to
a. 9 seconds. b. $\frac{1}{9}$ second. c. $\frac{1}{9}$ oscillation/second.
- If the angle between the incident light ray and the reflected light ray is 40° , so the angle of reflection equals
a. 90° b. 80° c. 20°

B What happens to each of the following ... ?

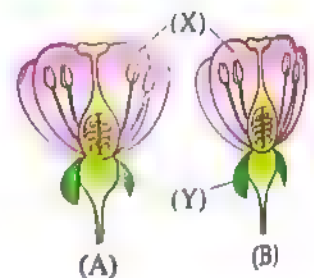
- A light ray falls perpendicular on a reflecting surface.
- Ovary after fertilization.
- A light ray travels from a transparent medium of high optical density to another of lower optical density.

C What is meant by inverse square law of sound ?

Question 4

A The opposite figure shows two flowers of two plants from the same species :

- What is the name of parts (X) and (Y) ?
- Mention the function of parts (X) and (Y) ?
- What is the sex of flowers (A) and (B) ?



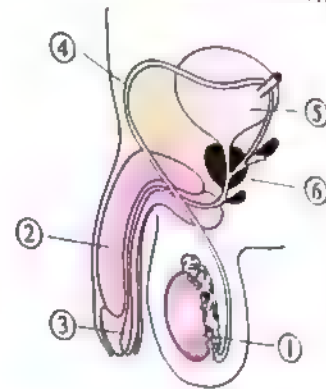
B Give reasons for :

- The stigma of air pollinated flowers are feathery like and sticky.
- The oscillatory motion is considered as a periodic motion.
- We see lightning before hearing thunder.
- Piano sound differs from that of violin even if they have the same pitch and intensity.

Study the opposite figure, then answer the following questions :

1. What does the figure represent ?
2. Label the figure.

Final Examinations



9

Giza Governorate

El-Haram Directorate
Al-Mostakbal Modern Language School

Answer the following questions :

Question 1

Complete the following :

1. The complete oscillation includes displacements, each is called
2. The frequency of sonic waves ranges between Hz to KHz.
3. The voice of women is pitched, while the voice of men is pitched.
4. Types of pollination are and

What is meant by ... ?

1. Fertilization.
2. Periodic motion.
3. The first law of light reflection.

Calculate the periodic time of a source that makes 600 oscillations in one minute.

Question 2

Choose the correct answer :

1. All of the following are factors affecting sound intensity except
 a. amplitude of vibration. b. medium density.
 c. frequency. d. wind direction.
2. One amplitude is of a complete oscillation.
 a. four times b. quarter c. half d. equal one
3. The outer whorl of the flower is called
 a. petal. b. calyx. c. stamen. d. corolla.
4. All of these sounds are of uniform frequency except the sound of
 a. piano. b. violin. c. loudspeakers. d. guitar.
5. The highest point in the transverse wave is called
 a. trough. b. compression. c. crest. d. rarefaction.

6. The distance covered by the wave in unit time is called
- a. wavelength. b. wave velocity. c. sound velocity. d. light velocity.

B Compare between the following :

Regular reflection and irregular reflection.

C Calculate the frequency of a musical tone similar to the frequency produced by Savart's wheel rotates with a velocity of 120 cycles in a minute given that the number of the gear's teeth is 30 teeth.

Question 3

A State the type of each of the following flowers and give reason :



(a)



(b)



(c)

B Give reasons for :

1. Clear glass is a transparent medium.
2. The human ear distinguishes between sounds from different sources even if they are equal in intensity and pitch.
3. The absolute refractive index of any transparent medium is always greater than one.
4. Palm flowers are unisexual.
5. The light ray that falls perpendicular on a reflecting surface, reflects on itself.

C Mention the function of the following :

1. Androecium.
2. Ultrasonic waves in medical and military fields.
3. Fallopian tube.
4. Testis.

Question 4

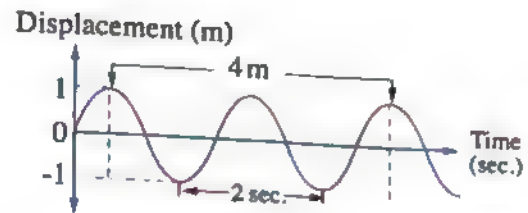
A Write the scientific term :

1. The transfer of pollen grains from the anther of one flower to the stigma of the same flower.
2. The measuring unit of sound intensity.
3. The number of complete oscillations made by the body in one second.
4. It is a natural phenomenon that takes place on the desert roads at noon especially in the summer times.
5. The maximum displacement made by an oscillating body away from its point of rest.
6. The change of light path when it travels from a transparent medium to another.

- ① Compare between the following :
Mechanical waves and electromagnetic waves.

② From the opposite figure, calculate :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



10 Giza Governorate

Dokki Zone
Orouba Language School

Answer the following questions :

Question 1

Choose the correct answer :

1. If the periodic time of an oscillatory body is 0.1 sec., so the number of complete oscillations in one minute is
a. 10 b. 600 c. 120 d. 60
2. If the distance between the centre of the third compression and the fifth compression on the wave propagation is 20 cm, the wavelength of this wave is cm.
a. 40 b. 20 c. 10 d. 5
3. The sound velocity is the greatest through
a. vacuum. b. solids. c. liquids. d. gases.
4. All of the following are electromagnetic waves except waves.
a. light b. sound c. infrared d. radio
5. The voice of Adam differs from that of Sara because they are different in
a. age. b. intensity. c. pitch. d. kind.
6. The sound of frequency 200 Hz is than the sound of frequency 100 Hz.
a. stronger b. sharper c. weaker d. harsher
7. All of the following are factors affecting sound intensity except
a. amplitude of vibration. b. medium density.
c. frequency. d. wind direction.
8. If the angle between the incident light ray and the reflecting surface is 50° , so the angle between the incident ray and the reflected ray equals
a. 40 b. 50 c. 60 d. 80
9. The quantum of energy of green light is the quantum of energy of yellow light.
a. greater than b. equal to c. smaller than d. no correct answer

10. media do not allow light to pass through it.
 a. Transparent b. Translucent c. Opaque d. no correct answer
11. The floral whorl which is absent in the female flower is
 a. calyx. b. corolla. c. androecium. d. gynoecium.
12. The innermost whorl of the male flower is
 a. gynoecium. b. androecium. c. corolla. d. calyx.

Question 2

A Give reasons for :

1. Sound waves are mechanical waves, while radio waves are electromagnetic waves.
2. Sound travelling in air has less intensity than that travelling in carbon dioxide.
3. Man cannot hear all sounds produced by dolphins.
4. The ray falling perpendicular on the separating surface between two media different in the optical density doesn't refract.
5. Occurrence of mirage phenomenon in desert region at noon.
6. Light can travel through free space.

B Write the scientific term :

1. An oval-shaped gland that produces male cells.
2. The period between fertilization and delivery.

Question 3

A What happens when ... ?

1. You throw a stone in water.
2. You look at a pencil partially immersed in water.
3. The syphilis infected person is not treated.

B Calculate the number of complete oscillations that are made by a body in 2 minutes if its frequency 6 Hz.

C What is the importance (uses) of ... ?

1. Ultrasonic waves.
2. Triangle glass prism.

Question 4

A Compare between the following :

1. Transverse waves and longitudinal waves.
2. Regular reflection and irregular reflection.

B What is meant by ... ?

1. First law of reflection.
2. Visible light.
3. Mirage.

- C** Mention the name of the figure and complete the labels on the drawing :



11 Alexandria Governorate

Middle Zone
Science Inspectorate

Answer the following questions :

Question 1

- A** Complete the following statements :

1. The measuring unit of sound intensity is
2. As the amplitude increases, the sound intensity
3. Infrasonic waves are sound waves of frequencies less than Hz.
4. When a light ray falls perpendicular on a reflecting surface the angle of reflection equals
5. In the flower, a group of stamens forms
6. The natural vegetative reproduction in sweet potatoes is done by

- B** Cross out the odd word then mention the scientific term of the rest :

1. Sound waves / Light waves / Infrared waves / Radio waves.
2. Stigma / Filament / Ovary / Style.
3. Ovary / Epididymis / Uterus / Vagina / Cervix.

- C** Compare between the following :

1. Auto pollination and mixed pollination in plants (concerning the definition).
2. Regular reflection and irregular reflection (concerning the texture of the reflecting surface and the direction of the reflected rays).

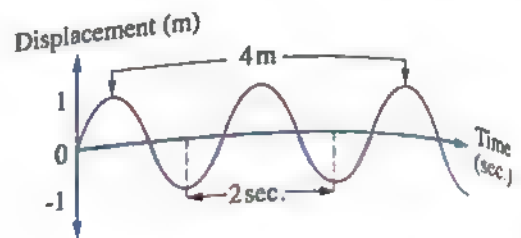
Question 2

- A** Write the scientific term of each of the following :

1. The point of the lowest density and pressure in the longitudinal wave.
2. A natural phenomenon that appears on desert in summer at noon as a result of light reflection and refraction.
3. The colour which has the maximum deviation in spectrum colours.
4. Bodies don't allow the passage of light through them.
5. A new method to produce large numbers of plants from small parts of it.
6. The cell resulting from the fusion of the pollen grain nucleus with the egg nucleus.

B From the opposite figure, find :

1. Amplitude.
2. Periodic time.
3. Frequency.
4. Wavelength.



C What happens ... ?

1. When a light ray passes from air to glass.
2. To the ovary after fertilization in plant.

Question 3

A Choose the correct answer :

1. The clock pendulum motion is an example of motion.
 - a. wave
 - b. oscillatory
 - c. circular
 - d. one direction
2. One amplitude equals of a complete oscillation.
 - a. $\frac{1}{2}$
 - b. $\frac{1}{3}$
 - c. $\frac{1}{4}$
 - d. $\frac{1}{8}$
3. Sound of frequency 200 Hz is than sound of frequency 100 Hz.
 - a. weaker
 - b. sharper
 - c. harsher
 - d. stronger
4. The sound velocity is maximum in
 - a. vacuum.
 - b. gases.
 - c. liquids.
 - d. solids.
5. The swollen part upon the pedicle on which the floral whorls exist is called
 - a. stem.
 - b. receptacle.
 - c. bract.
 - d. leaves.
6. Grafting by attachment can be carried to the trees.
 - a. grapes
 - b. sugar cane
 - c. roses
 - d. mango

B Mention the use or importance of the following :

1. Ultrasonic waves in medical field.
2. Jacuzzi.
3. Triangular glass prism.
4. Corolla.

C Savart's wheel rotates with a rate of 300 cycles per minute, a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of gear teeth.

Question 4

A Correct the underlined words :

1. The relation between frequency and wavelength is constant relation.
2. The light travels in curved lines.
3. The absolute refractive index of any material is always smaller than one.
4. In pollination by water the flower has feathery like and sticky stigma.
5. Olive fruit is a multi-seed fruit.
6. Buds buried inside the soil grow to form the shoot system.

1. The piano sound differs from that of the violin even if they have the same sound properties
2. On doubling the distance between the light source and the surface, the light intensity decreases.

● In the opposite figure :
Mention the name of F

1. Mention the name of parts (X) and (Y).
2. What is the function of part (Y) ?
3. Identify the sex of this flower.



El-Agamy Educational Zone

Answer the following questions :

Question 1

Complete the following statements :

1. The measuring unit of noise intensity is , while is the measuring unit of the amplitude.
2. Light reflection is classified into and
3. After fertilization, the ovary grows forming the , while the ovule is converted into
4. The glass prism is used to analyse the light into colours.

8 Give reasons for :

1. We see lightning before hearing thunder.
2. Occurrence of mirage phenomenon.
3. The petals of corolla are colourful and scented.

Look at the opposite diagram, then answer the following :

1. What is the name of this system ?
2. What is the number of structure which secretes progesterone ?
3. What is the number of structure in which fertilization occurs ?
4. What is the number of structure in which the fetus is growing ?



Choose the correct answer :

1. If the angle between the incident light ray and the reflected light ray is 30° so, the angle of reflection is

a. 30

b. 15

c. 60

d. 40

2. Pollen grains are produced from the
 a. ovary. b. calyx. c. anther. d. gynoecium.
3. The periodic time of a tuning fork which makes 240 waves in one minute equals
 a. 1 sec. b. 4 sec. c. 0.5 sec. d. 0.25 sec.
4. waves are longitudinal waves.
 a. Water b. Light c. Sound d. Radio
- B** Mention one function of ... ?
 1. Jacuzzi. 2. Calyx in flower. 3. Savart's wheel. 4. Tissue culture.
- C** What happens if ... ?
 1. A light ray falls perpendicular to the interface between two different transparent media.
 2. Light falls on a flint glass.
 3. The anther and the ovary don't grow at the same time.

Question 3

- A** Write the scientific term :
 1. The ability of the medium to refract light.
 2. The flower that contains the four whorls.
 3. Changing the path of light when it travels between two different transparent media.
 4. A property of sound by which ears can distinguish between sharp and rough sounds.
- B** Calculate the number of gear's teeth when Savart's wheel makes 600 cycles in one minute to produce a tone of frequency 300Hz.
- C** Give one example for :
 1. Unisexual flower. 2. Fruit has many ovules.
 3. Transparent medium. 4. Natural vegetative reproduction.

Question 4

- A** Mention one difference between :
 1. Transverse waves and longitudinal waves.
 2. Self pollination and cross pollination.
 3. Infrasonic waves and ultrasonic waves.
- B** Correct the underlined words :
 1. The movement of the clock pendulum is an example of wave motion.

2. The sound intensity decreases, when the source of sound touches an empty box.
 3. Yellow colour is the first colour in spectrum colours.
 4. Each carpel consists of ovary, filament and stigma.
- 10 Calculate the wave velocity of a longitudinal wave if you know that its frequency is 150 Hz and its wavelength is 10 cm.
- 11 Define :
1. Complete oscillation.
 2. Speed of light.

13 Alexandria Governorate

El-Gomrok Zone

Answer the following questions :

Question 1

- 1 Complete the following statements :

1. The measuring unit of noise intensity is , while the measuring unit of sound intensity is
2. Savart's wheel is used to determine the of an unknown tone.
3. The stigmas are feathery like and sticky to
4. is the reflection of light rays when they meet a rough surface.
5. A pencil partially immersed in water appears as being
6. The angle between the incident light ray and the reflecting surface is 30° , so the angle of reflection will be equal to
7. The periodic time of an oscillating body which makes 480 oscillations in one minute equals

- 12 Give reasons for :

1. Sound travelling in carbon dioxide has higher intensity than in air.
2. A light ray transfers from a transparent medium to another and doesn't refract.
3. Sound waves are mechanical waves, while radio waves are electromagnetic waves.
4. Vas deferens is important in the male reproductive system.

- 13 Calculate the absolute refractive index of glass if the velocity of light in glass is 2×10^8 m/sec. knowing that the velocity of light through air is 3×10^8 m/sec.

Question 2

- 1 Write the scientific term :

1. The ability of the medium to refract light.

2. Short stem where the leaves are modified into reproductive organs.

3. Sound waves of frequencies less than 20 Hz.

4. Natural phenomenon that takes place on the desert roads in summer where objects seem as inverted images.

5. Light intensity is inversely proportional to the square of the distance.

6. A new method of producing large numbers of plants from a small part of it.

II Compare between the following : (2 points only)

1. Sound pitch and sound intensity.
2. Androecium and gynoecium.

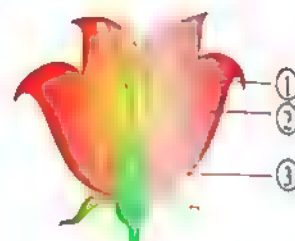
C What is meant by ... ?

1. Pollination.
2. The amplitude of an oscillating body is 3 cm.

Question 3

A The opposite figure represents the typical flower :

1. Label the figure.
2. What's the type of pollination, that happens in this flower ?



B Correct the underlined words :

1. The absolute refractive index is equal to one.
2. Human can distinguish sounds of frequencies between 10 : 20 Hz.
3. Olive fruit contains more than one seed.
4. Sweet potato is considered as a stem.
5. Estrogen hormone is responsible for continuity of the pregnancy.

Question 4

A What happens when ... ?

1. A light ray falls perpendicular on a reflecting surface.
2. A pollen grain falls on the stigma of a flower.
3. The oscillating body passes its rest position during its movement (concerning its velocity).

B Mention one example for :

1. A transverse wave.
2. Regular reflection.
3. Oscillatory motion.

C Savart's wheel rotates with a rate of 300 cycles per minute. Calculate the number of teeth of the gear if the frequency equals 600 Hz.

Answer the following questions :

Question 1

A Complete the following statements :

1. Sound pitch is a property by which ear can distinguish between
2. There are two types of reproduction in plants which are and
3. Sound wave velocity = x
4. Waves are classified according to the ability to propagate and transfer energy into and waves.
5. Carpels produce inside the
6. The frequency of sonic waves ranges between Hz and Hz.
7. motion is the motion which is regularly in equal periods of time.
8. The calyx is a group of leaves, each leaf is called

B From the opposite figure, answer :

1. The ray (AB) represents
2. The ray (BC) represents
3. Angle (X) is
4. Angle (Y) is



C Compare between the following :

1. Male flower and hermaphrodite flower (One point only).
2. Regular and irregular light reflection (One point only).
3. Violet and red lights (Concerning: the frequency).
4. Light waves and sound waves (Two points).

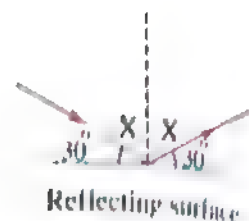
Question 2

A Write the scientific term :

1. The fusion of the nucleus of the male cell (pollen grain) with the nucleus of the female cell (ovum) to form the zygote.
2. An organ in the flower, which consists of filament and anther.
3. Sound waves of frequencies more than 20 KHz.
4. The maximum displacement of the medium particles away from their rest positions.
5. A floral whorl in the flower, whose function to attract insects as it is colourful and scented.

B From the opposite figure :

1. Calculate the angles of incidence and reflection.
2. What can you conclude from this figure ?
3. What will happen if this light ray falls perpendicular on the reflecting surface ?

**C Put (✓) or (x) and correct the wrong ones :**

1. Sound velocity through liquids is more than that through gases. ()
2. The pollen grains of the air pollinated flowers are sticky and have coarse surface. ()
3. If the angle between the incident light ray and the reflecting surface is 40° , so the angle of reflection equals 40° according to the first law of light reflection. ()
4. If the speed of sound wave through air = 340 m/sec, and the frequency of a vibrating body = 170 Hz, so the wavelength = 2 metres. ()

D There are some types of flowers in front of you :

(a)



(b)



(c)

1. State the type of flowers (a) and (b).
2. In which one of these flowers, pollination can be mixed pollination and in which one can be self pollination ? Give reasons for your answer.
3. Which of these flowers can't form fruits ?

Question 3**A Choose the correct answer :**

1. If the angle between the incident light ray and the reflected light ray is 90° , so the angle of incidence equals
 a. 0° b. 90° c. 45° d. no correct answer
2. The light waves are waves.
 a. mechanical transverse b. electromagnetic transverse
 c. mechanical longitudinal d. electromagnetic longitudinal
3. The human ear can hear sounds of frequency
 a. 50 KHz. b. 30 KHz. c. 300 Hz. d. 5 Hz.
4. The measuring unit of noise intensity is
 a. decibel. b. watt/m² c. Hz. d. metre/sec.

5. The amplitude of the simple pendulum is of a complete oscillation.

- a. four times b. a quarter c. a half d. double

6. The floral whorl, which is absent in the female flower is

- a. calyx. b. corolla. c. androecium. d. gynoecium.

B Give reasons for :

1. The ultrasonic waves are used in milk sterilization.
2. Olive fruit contains only one seed, while pea fruit contains more than one seed.
3. We see lightning before hearing thunder.
4. To pick up a coin which has fallen in water, we must look at it vertically.
5. The uterus has a muscular wall.

C 1. Calculate the time in minutes taken by Savart's wheel to make 600 cycles, if the frequency of the sound produced by touching a metallic plate with a gear of 60 teeth is 300 Hz.

2. From the opposite figure, choose the correct answer :

a. The periodic time =

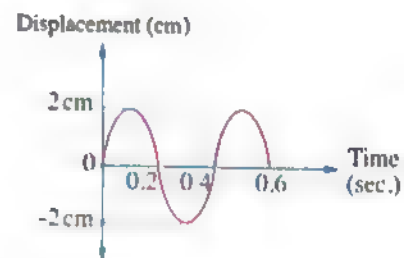
(0.2 sec. – 0.4 sec. – 0.6 sec. – 0.4 m)

b. Frequency =

(0.2 sec. – 0.4 Hz – 2.5 cycle/sec. – 0.4 m)

c. The amplitude =

(0.2 sec. – 0.4 sec. – 2 cm – 0.4 cm)



Question 4

A Correct the following statements :

1. The inner most whorl of a female flower is the androecium and the number of its whorls is four.
2. When the light ray travels from glass to air, it refracts near to the normal, because the air has higher optical density than glass.
3. The oscillating body of frequency 360 Hz makes 180 complete oscillations in half a minute.
4. Ultrasonic waves that can be heard by man have frequencies less than 20 Hz.
5. Air and clear water are examples of translucent media, while tissue paper and flint glass are examples of opaque media.
6. The fish is seen lower than its real position in the fish tank.

B Mention the mathematical relation between each of the following :

1. Frequency and periodic time.
2. The sound frequency and the number of teeth in Savart's wheel.
3. The first law of light reflection.
4. Frequency and number of complete oscillations made by an oscillating body at a certain time.

C Cross the odd word out, then state the relation among the remaining words :

1. Sound waves / Light waves / Radio waves / Infrared waves.
2. Red / Orange / White / Violet.
3. Stigma / Stamen / Ovary / Style.
4. Pendulum's motion / Spring motion / Rotary bee motion / Swing's motion.

D What happens ... ?

1. To the ovary and ovule after fertilization.
2. When the distance between the light source and a surface is doubled (concerning the light intensity).
3. When the frequency of a wave is doubled (concerning the wavelength) when the wave velocity is constant.
4. When you put a ringing mobile phone on a resonance box (concerning the sound intensity).

15 El-Sharkia Governorate

East Zagazig Educational Zone
Omar Al-Farouk (O.L.S.)

Answer the following questions :

Question 1

A Complete the following statements :

1. Hermaphrodite flowers take the symbol , while male flowers take the symbol
2. The crest in the wave is equivalent to the in the longitudinal wave.
3. After fertilization in plants, ovule changes into , but ovary converts into
4. A complete oscillation consists of displacements, each one is called
5. The measuring unit of sound intensity is , while the measuring unit of noise intensity is

B Mention the use or function of the following :

1. Savart's wheel.
2. Sepals in a flower.
3. Petals in a flower.
4. Jacuzzi.

Question 2

A Write the scientific term :

1. A new method to produce large numbers of plants from a small part of it.
2. It is a way of pollination which takes place by the help of man.
3. The scientist who proved that the energy of light waves is composed of photons.
4. The sexual reproductive organ in the plant.
5. The time needed by the oscillating body to make a complete oscillation.
6. The cell resulting from the fusion of the pollen grain and the ovum nuclei.
7. The ability of the transparent medium to refract light.
8. A medium that does not allow light rays to pass through.

B Compare between the following :

1. Self pollination and mixed pollination (concerning: the definition).
2. Red colour and violet colour (concerning: the deviation and the closest to the prism apex and base).

C Calculate the frequency of an oscillating body that makes 300 complete oscillations in half a minute (mention the used mathematical relation).

Question 3

A Give reasons for :

1. We see lightning before hearing thunder.
2. The use of ultrasonic waves in milk sterilization.
3. Palm flowers are unisexual.

B What is meant by ... ?

1. Absolute refractive index of water is 1.33
2. The wavelength of a sound wave is 1.5 m.

C Complete the opposite figures after redrawing them in your answer sheet then complete the following statements :

1. In fig. (1) the angle of reflection =
2. In fig. (2) the angle of incidence =

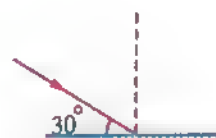


Fig. (1)

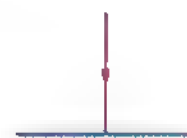


Fig. (2)

Question 4

A Choose the correct answer :

1. The tuber is a root like
 a. sweet potatoes. b. potatoes. c. grapes. d. roses.

2. The human ear can distinguish sounds of frequency
 a. 50 KHz. b. 50 Hz. c. 30 KHz. d. 30000 KHz.
3. The anther in plants has chambers containing pollen grains.
 a. 3 b. 2 c. 4 d. no correct answer
4. The result of multiplying the frequency of an oscillating body by its periodic time equals
 a. $\frac{1}{4}$ b. 2 c. $\frac{1}{2}$ d. 1
5. Sound of frequency 200 Hz is than sound of frequency 100 Hz.
 a. sharper b. stronger c. harsher d. weaker
6. The right ovary produces a ripe ovum every days.
 a. 28 b. 56 c. 23 d. 46

B What happens when ... ?

1. Pollen grains mature and become well developed (concerning: the anther).
2. The light ray travels from air to glass (concerning: the refracted ray).
3. An oscillating body passes the point of rest (concerning: the velocity).

C Calculate the wavelength in metre for a visible light wave of frequency 6×10^{14} Hertz and velocity 3×10^8 m/s (mention the used mathematical relation).

16 El-Menofia Governorate

Kowana Educational Zone
Science Inspectorate

Answer the following questions :

Question 1

A Complete the following statements :

1. Sound travels through air as pulses of and
2. Waves are classified according to the ability to propagate and transfer energy into . . waves and waves.
3. There are two types of pollination in flowers, which are and
4. The measuring unit of sound intensity is , while the measuring unit of noise intensity is
5. Gynoecium is the reproductive organ of the flower and it consists of a group of

B Savart's wheel rotates with a rate of 300 cycles per minute, a sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear, calculate the number of teeth of the gear.

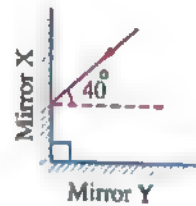
C What will happen when ... ?

1. Light ray falls perpendicular on a reflecting surface.
2. Increasing the frequency of a wave to its double value when the wave velocity is constant (concerning the wavelength).

Question 2

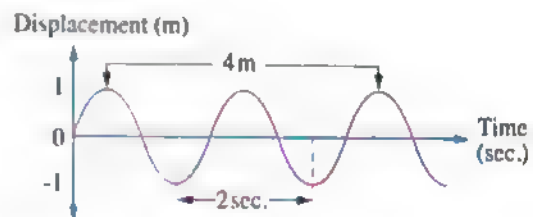
A Choose the correct answer :

1. From the opposite figure, the angle of reflection of the ray on mirror (Y) is
a. 50 b. 20 c. 70
2. Sound wave travels in air with velocity 330 m/sec. and has a wavelength 0.1 m, so its frequency equals
a. 330 KHz. b. 330 Hz. c. 3300 Hz.
3. Tulip is an example for flower.
a. female b. male c. bisexual
4. The ratio between the periodic time of a tuning fork vibrates with 100 Hz, and the periodic time of another tuning fork vibrates with 200 Hz respectively equals
a. 1:1 b. 2:1 c. 1:2
5. After fertilization, the develops to become a seed.
a. flower b. ovary c. ovule



B From the opposite figure, find :

1. Wavelength.
2. Periodic time.
3. Frequency.
4. Wave velocity.
5. Amplitude.



C What is meant by ... ?

1. Sound pitch.
2. Reproduction by grafting.

Question 3

A Write the scientific term :

1. The motion which is regularly repeated in equal periods of time on the two sides of rest position.
2. It is a short stem whose leaves are modified to form the sexual reproduction.
3. It is the medium which permits most light to pass through.
4. Waves of frequencies ranging from 20 Hz to 20000 Hz.
5. The intensity of sound at a certain point is inversely proportional to the square of the distance between this point and the sound.

6. It is a natural phenomenon that takes place on desert roads at noon due to reflection and refraction of light in air layers.
7. The scientist who discovered that the energy of photon depends on its frequency.

B Correct the underlined words :

1. The angle of incidence equals half the angle of reflection.
2. Fusion between the pollen grain and the ovum is called pollination.
3. Changing the light ray path when it faces a transparent object is considered light reflection.
4. Reproduction by tubers can be used in apples and pears.
5. As the density of the medium decreases, the amplitude increases.
6. Bract is a group of flowers arranged on the same axle.
7. The ovaries are adapted to receive the ovum and deliver it to uterus.
8. The ovum consists of head, middle part and tail.

C Compare between the following : (one point only)

1. Musical tones and noises.
2. Vegetative reproduction and flowering reproduction.

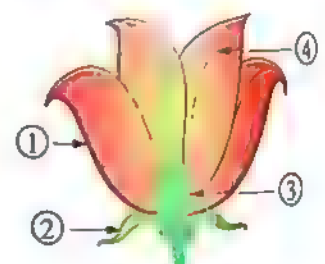
Question 4

A Give reasons for :

1. Stigmas of flowers are sticky.
2. The absolute refractive index of any medium is always more than one.
3. The piano sound differs from that of violin even if they are having the same intensity and pitch.
4. The energy of red light photon is less than that of orange light photon.
5. The floor of the swimming pool appears higher than its real position.

B From the opposite figure :

1. Label the figure.
2. What is the sex of the flower ?
3. What is the function of number ② ?



C Mention one function for each of the following :

1. Ultrasonic waves.
2. Jacuzzi.
3. Resonance box in some musical instruments.

17 Al-Gharbeya Governorate

Al-Gharbeya Educational Directorate
Department of Language Schools Supervision

Answer the following questions :

Question 1

A Complete the following statements :

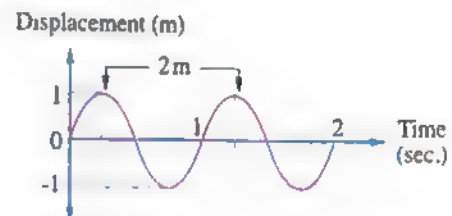
1. When a tuning fork vibrates, the produced is transferred in the form of waves.
2. The crest in the wave is equivalent to the in the longitudinal wave.
3. In the uniform reflection, the light rays reflect in direction when they fall on a surface.
4. The male organ in the flower is , while the female organ is

B Compare between each of the following :

1. Longitudinal wave and transverse wave (in term of wavelength).
2. Transparent medium and opaque medium (in term of definition).
3. Pollen grain and ovum (in terms of mobility "movement" and number).

C From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



Question 2

A Choose the correct answer :

1. The result of multiplying the frequency of an oscillating body by its periodic time equals
 a. $\frac{1}{4}$ b. $\frac{1}{3}$ c. $\frac{1}{2}$ d. one
2. The human ear can distinguish sounds of frequency
 a. 50 KHz. b. 30 KHz. c. 200 Hz. d. 5 Hz.
3. A sound wave travels in air with velocity 330 m/s and has a wavelength of 0.1 m, its frequency is
 a. 330 KHz. b. 33 KHz. c. 3300 Hz. d. 330 Hz.
4. After fertilization, the ovary develops to become a
 a. fruit. b. sepal. c. petal. d. flower.

B What will happen when ... ?

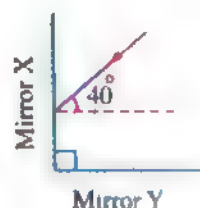
1. The frequency of a wave increases to the double of its value (concerning the wavelength) when the wave velocity is constant.
2. Light ray travels from glass to air.
3. Pollen grains mature and become well developed.

C Savart's wheel rotates with a rate of 300 cycles per minute, a sound frequency of 600 Hz is produced when an elastic plate touches the teeth of the gear, calculate the number of teeth of the gear.**Question 3****A** Write the scientific term of each of the following :

1. The periodic motion made by a body around its point of rest, where the motion is repeated through equal intervals of time.
2. The maximum displacement achieved by an oscillating body away from its point of rest.
3. The ability of the medium to refract light rays.
4. Short stem where leaves are developed and modified into reproductive organs.

B Give a reason for each of the following :

1. We see lightning before hearing thunder.
2. The light ray that falls perpendicular on a glistening surface, reflects on itself.
3. Palm flower is unisexual.

C Complete the opposite figure to determine the angle of reflection of the light ray on mirror (Y).**Question 4****A** Put (✓) or (x) :

1. The movement of the clock pendulum is an example for wave motion. ()
2. The velocity of sound waves propagation in air is greater than that of light waves. ()
3. The submerged object in water is seen in an apparent position slightly above its real position. ()
4. Reproduction by tubers happens in orange and bitter orange. ()

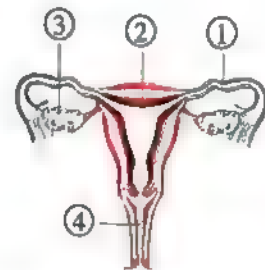
B Mention the importance of :

1. Ultrasonic waves (one importance is enough).
2. The calyx in the flower.

- C** Calculate the absolute refractive index of diamond giving that the speed of light through it = 1.25×10^8 m/s and the speed of light through air = 3×10^8 m/s.

- D** Study the opposite figure which represents the female genital system, then answer the following questions :

1. Replace the numbers present in the figure with suitable labels.
2. What is the organ in which :
 - (a) Ova are produced ?
 - (b) The ovum is fertilized ?



18 Dakahlia Governorate

Educational Directorate
Belkas Administration

Answer the following questions :

Question 1

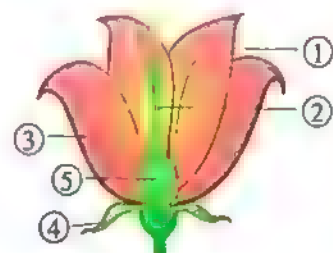
- A** Write the scientific term :

1. Fusion of the nucleus of the male cell with the nucleus of the female cell.
2. The disturbance that propagates and transfers energy in the direction of propagation.
3. The area in the longitudinal wave, at which the medium particles are of the highest density and pressure.
4. Short stem where leaves are developed and modified into reproductive organs.
5. Sound waves of frequencies less than 20 Hertz.
6. The ability of the medium to refract light rays.
7. The reproduction of some plants by parts of the root, stem or leaves.
8. It transfers the sperms from the testes to the urethra.

- B** Calculate the frequency of a musical tone similar to the frequency of a produced tone using Savart's wheel rotated with a velocity of 960 cycles in two minutes, given that the number of teeth of the gear is 30 teeth.

- C** Complete the labels on the figure, and mention :

1. The sex of the flower.
2. Its symbol.
3. The way of reproduction.



Question 2

- A** Complete the following statements :

1. A new method to produce large numbers of plants from a small part of it is called
2. The absolute refractive index of a medium is the ratio between to

3. The energy of the photon is proportional to the of the light wave.
4. colour has the longest wavelength, while colour has the shortest wavelength.
5. Sharp tones have frequencies, while rough tones have frequencies.
6. If the vertical distance between crest and trough is 4 cm, the amplitude equals cm.

II What happens in each of the following cases ... ?

1. Increasing the frequency of a wave to its double value when the wave velocity is constant (concerning the wavelength).
2. To the ovary after fertilization in plants.
3. Light ray travels from water to air.
4. To the ovule after fertilization in plants.

Question 3

A Choose the correct answer :

1. If the frequency of an oscillating body is 10 Hz, so the periodic time is
a. 10 sec. b. 0.01 sec. c. 0.1 sec. d. 1 sec.
2. The sound of frequency 500 Hz is than the sound of frequency 100 Hz.
a. stronger b. sharper c. weaker d. harsher
3. When the distance between the light source and a certain surface is doubled, the light intensity on the surface
a. decreases to quarter. b. increases four times.
c. is doubled. d. remains constant.
4. The angle of incidence of light is its angle of reflection.
a. larger than b. smaller than c. equal to d. no correct answer
5. The value of absolute refractive index does not equal
a. 1.5 b. 1.8 c. 1 d. 1.3
6. Flowers pollinated by air characterized by all of the following except ..
a. hanged anthers. b. feathery like stigmas.
c. scented petals. d. light pollen grains.
7. If the distance between the centre of the third compression and that of the fifth compression is 20 cm, the wavelength of this wave is
a. 40 cm. b. 20 cm. c. 10 cm. d. 5 cm.
8. All of the following are factors affecting sound intensity except the
a. amplitude of vibration. b. medium density.
c. frequency. d. wind direction.

B What is the meant by ... ?

1. Pollination.
2. Angle of refraction of a light ray is 45°
3. Sonic waves.
4. Sound velocity through air is 340 m/s.

Question 4**A Put (✓) or (✗) :**

1. The velocity of the oscillating body is minimum when it passes its rest position. ()
2. The corolla is the male reproductive organ in the flower. ()
3. Infrasonic waves are used in breaking down stones of kidney. ()
4. Sound can be heard from all directions that surround the sound source. ()
5. Harmonic tones that accompany the fundamental tone are lower in pitch. ()
6. Reproduction by tubers can be used in apples and pears. ()
7. The fish is seen higher than its real position in the fish tank. ()
8. Complete oscillation consists of $\frac{1}{4}$ amplitude. ()
9. Wood doesn't allow the passage of light through it. ()
10. The measuring unit of sound intensity is decibel. ()

B Sound waves of frequency 200 Hz and wavelength 1.7 metre, calculate :

1. The velocity of sound waves propagation in air.
2. The wavelength of these waves of frequency 200 Hz when they propagate in water with velocity 1500 m/s.

19 Ismailia GovernorateEducational Directorate
Science Inspectorate

Answer the following questions :

Question 1**A Choose the correct answer :**

1. The speed of the ball of the simple pendulum as we move away from the rest position.
a. doesn't affect b. decreases c. is doubled d. no correct answer
2. The origin of the peach fruit seed is the
a. ovary. b. carpel. c. stigma. d. ovule.
3. Human ear cannot distinguish the sound of frequency equals
a. 50 Hz. b. 30 Hz. c. 300 Hz. d. 5 Hz.
4. The colour light in the spectrum colours has the highest deviation.
a. white b. red c. violet d. yellow

5. The corolla leaves are called
 a. petals. b. carpels. c. stamens. d. sepals.
6. Regular reflection appeared on
 a. the skin. b. a plan mirror. c. a tree leaf. d. a piece of wood.

B Calculate the frequency of a musical tone similar to the frequency of a produced tone using Savart's wheel rotated with a velocity of 960 cycles in 2 minutes, given that the number of teeth of the gear is 30 teeth.

C Mention one importance for each of the following :

1. The calyx in the flower.
2. Jacuzzi.
3. Ultrasonic waves in industry.

Question 2

A Compare between the following :

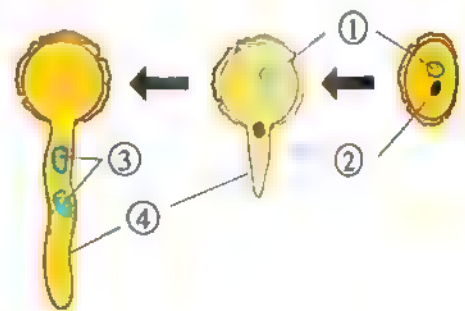
1. Transparent and translucent medium (related to the definition).
2. Noise intensity and sound intensity (related to the measuring unit).

B Write the scientific term :

1. The group of flowers that carried on the same axle.
2. The distance that a wave travels in one second.
3. The product of Planck's constant times the frequency of photon.
4. A modern way of multiplying a small part of the plant to get a large numbers of plants.
5. It is a property by which the ears can distinguish between sound levels, either sharp or harsh.
6. The ratio between the speed of light in air and its speed in a transparent medium.

C From the opposite figure :

1. The figure represents
2. Write the labels of the figure.
3. Select the number of the parts that share in producing the zygote.



Question 3

A Give reasons for :

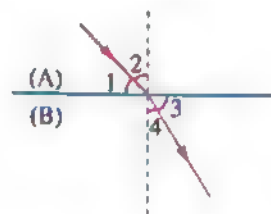
1. We see lightning before hearing the sound of thunder.
2. Stigmas of some flowers are feathery like and sticky.
3. Occurrence of mirage phenomenon in desert.

B Complete the following statements :

1. waves are transverse waves, while waves may be longitudinal or transverse waves.
2. Oscillatory motion and motion are from motion.
3. Reproduction by tubers is a reproduction, while reproduction by grafting is an reproduction.
4. Light intensity is proportional to of the distance between the surface and the source.
5. The flower of pumpkins is flower, while the flower of tulip is flower.

C From the opposite figure, find the number that refers to the following :

1. The angle of incidence.
2. The angle of refraction.
3. Which medium (A) or (B) is greater in the optical density ?



Question 4

A What happens when ... ?

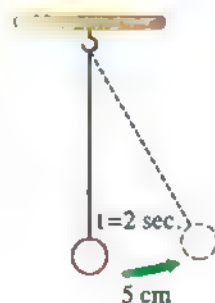
1. Increasing the density of a medium (related to the sound intensity).
2. Vibration of particles of a medium perpendicularly to the direction of wave propagation.
3. The incidence of a light ray perpendicularly on the reflecting surface.

B Correct the underlined words :

1. The simple harmonic motion is considered the simplest form of transition motion.
2. The big coloured flowers are pollinated by air.
3. The crest in the transverse wave is equivalent to the bottom in the longitudinal wave.
4. We see the submerged objects in water in a lower position than its real position.

C From the opposite figure, calculate the following :

1. Amplitude.
2. Periodic time.
3. Frequency.



D Mention the function of each of the following :

1. The scrotal sac.
2. Seminal fluid.

Question 1

Question 2

- B** Compare between transparent medium and opaque medium according to :
1. Definition.
 2. Examples (two examples for each medium).

- C** Mention one importance for each of the following :
1. Ultrasonic waves.
 2. Savart's wheel.

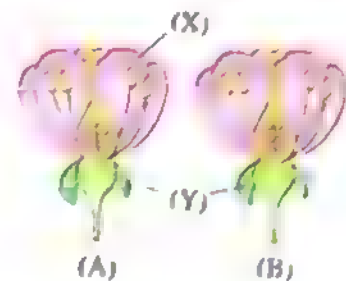
Question 3

- A** Write the scientific term of each of the following :

1. Wave consists of crests and troughs.
2. The number of complete oscillations produced by the oscillating body in one second.
3. Short stem where leaves are developed and modified into reproductive organs.
4. The ability of the medium to refract light rays.
5. The waves which need a medium to propagate.
6. The reflection in which the light rays recoil in many directions, when falling on a rough surface.

- B** The opposite figure shows two flowers of two plants of the same species :

1. What's the function of parts (X) and (Y) ?
2. Pollen grains from the flower (A) are transferred to the ova in flower (B) :
 - a. What's the type of pollination that happened ?
 - b. What's the sex of flower (A) ?



- C** What is meant by ... ?

1. Sonic waves.
2. Light intensity.

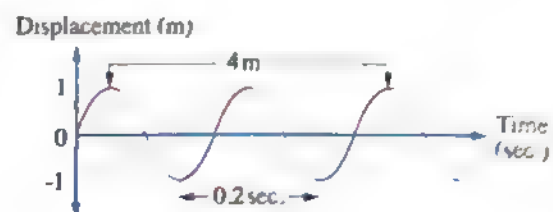
Question 4

- A** Put (✓) or (x) and correct the wrong ones :

1. Stigma is the male reproductive organ in the flower. ()
2. The movement of pendulum is an example for the wave motion. ()
3. Bats, dogs and dolphins can hear ultrasonic waves. ()
4. The sound intensity decreases, when the source of sound touches an empty box. ()
5. The light ray refracts towards the normal when it travels from air to glass. ()

- B** From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



21

Damietta Governorate

Damietta Educational Directorate
Science Inspectorate

Answer the following questions :

Question 1**A** Complete the following statements :

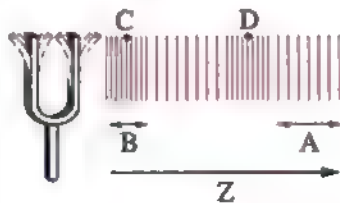
1. Sharp tones have frequencies, while rough tones have frequencies.
2. A complete oscillation consists of successive displacements and each of them is called
3. The absolute refractive index of water is the ratio between to
4. The two methods of reproduction by grafting are the grafting by and by
5. The measuring unit of the frequency is but the measuring unit of the noise intensity is

B Mention one use (function) for each of the following :

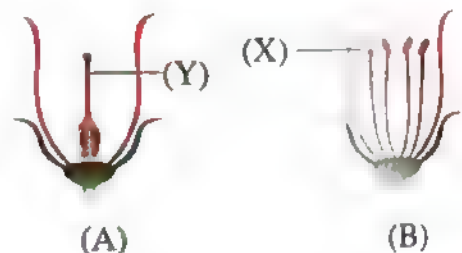
1. Androecium.
2. Ultrasonic waves in the medical field.
3. Tissue culture.
4. Savart's wheel.

C Sound waves of frequency 400 Hz in air and wavelength 85 cm. Calculate the velocity of these waves.**Question 2****A** Write the scientific term of each of the following :

1. They are complex tones composed of a fundamental tone associated by other tones higher in pitch and lower in intensity.
2. A phenomenon that appears in the desert as a result of reflection and refraction of light.
3. The measuring unit of the sound intensity.
4. The fertilized ovum.
5. The transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

B (1)

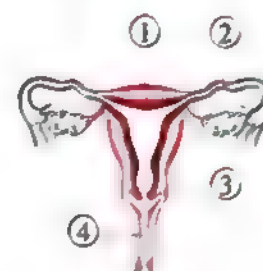
1. What is the kind of the produced wave ?
2. Label points (A) and (B).
3. What's the name of the distance between (C) and (D) ?
4. The arrow (Z) refers to the

(2)

1. What is the name of parts (X) and (Y) ?
2. Mention the function of part (X).
3. What is the sex of flowers (A) and (B) ?

Q Study this figure, then answer the questions :

1. What does this figure represent ?
2. Replace the numbers in the figure by suitable labels.
3. What is the label in which the embryo is delivered to life ?



Question 3

A Choose the correct answer :

1. The human ear can hear sounds of frequency KHz.
a. 10 b. 50 c. 70 d. 90
2. The ovum contains of the genetic material of the plant species.
a. double b. half c. quarter d. all
3. The artificial vegetative reproduction is done in plants by
a. grafting. b. cutting. c. tissue culture. d. all the previous.
4. When the incident light ray reflects on itself, the angle of incidence equals
a. 0° b. 90° c. 120° d. 180°
5. After fertilization, the ovary develops to become the
a. seed. b. flower. c. fruit. d. embryo.

B What is meant by ... ?

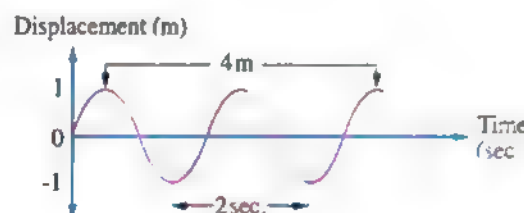
1. The inverse square law of light.
2. Sound pitch.
3. Flower.

C What happens in the following cases ... ?

1. Incidence of a white light ray on one face of a triangular glass prism.
2. A pollen grain falls on the stigma of a flower.

D From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



Question 4

A Give reasons for :

1. Light can travel through space.
2. The flower of bean plant is bisexual.
3. Sound intensity in the presence of carbon dioxide gas as a medium is higher than that in air.
4. Peach fruit contains only one seed.

B Compare between each of the following :

1. Pollination and fertilization (one point only for each one).
2. Regular and irregular reflection of light.
3. Transverse wave and longitudinal wave.

C Correct the underlined words :

1. The human skin is considered as translucent medium.
2. The energy of light quantum is directly proportional to its wavelength.
3. The pollen grains of insect pollinated flowers are smooth.
4. Bract is a group of flowers arranged on the same axle.
5. Reproduction by tubers can be used in apples and pears.

22**El-Behira Governorate**

Ismail Elhabrouk Formal Language School

Answer the following questions :

Question 1**A Complete the following statements :**

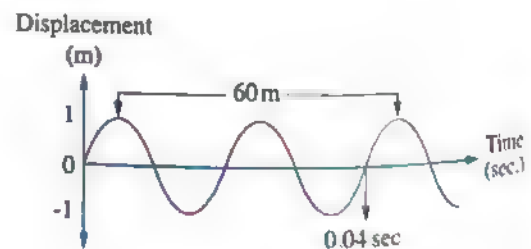
1. Pollen grains which spread by wind are produced by numbers, and their weights are
2. Sounds can be classified into two groups, musical tones of frequency and noises of frequency.
3. The measuring unit of sound intensity is , while the measuring unit of noise intensity is
4. The crest in the wave is equivalent to the in the longitudinal wave.

B Give a reason for each of the following :

1. The fish in water is seen in an apparent position slightly above its real position.
2. The petals of corolla are colourful and scented.
3. We see lightning before hearing thunder.
4. The nucleus of a sperm or an ovum contains half the hereditary material.

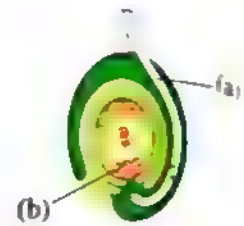
C From the opposite figure, calculate :

1. Frequency.
2. Wavelength.
3. Velocity of the wave.



C From the opposite figure :

1. Part (a) represents
2. When one of the two male nuclei fuses with (b),
..... is formed.
3. After fertilization, the ovule of this plant converts
into, then the ovary converts into
4. Identify fertilization process.



Question 4

A Correct the underlined words :

1. When a light ray falls perpendicular to a mirror its angle of reflection = 180°.
2. Reproduction by tubers can be used in apples.
3. Sound intensity is inversely proportional to the amplitude of the vibration of the sound source.
4. The velocity of the oscillating body reaches minimum when it passes the point of rest.

B Calculate the number of gear teeth of Savart's wheel, if a musical tone similar to the frequency of an emitted tone = 160 Hz, and Savart's wheel rotated with a velocity of 960 cycles in three minutes.

C Ahmed used a glass prism to analyse the white light into seven spectrum colours, then he concluded that :

1. The colour which makes the maximum deviation is, but the smallest deviation is
2. The colour which has the greatest energy is because

23

El-Fayoum Governorate

Science Supervision
For Governmental Language School

Answer the following questions :

Question 1

A Complete the following statements :

1. The crest in the wave is equivalent to the in the longitudinal wave.
2. The human ear can distinguish sounds of frequencies between and
3. Male organ in the flower is, while female organ in the flower is
4. The human skin is considered medium, while pure glass is medium for light.

B What is meant by ... ?

1. Periodic time.
2. Fertilization in plant.
3. Light refraction.

C What is the importance of ... ?

1. Savart's wheel.
2. Triangular glass prism.
3. Tissue culture.

Question 2

A Correct the underlined words :

1. Light propagates in zigzag lines.
2. Reproduction by tubers happens by roots in orange.
3. After fertilization in plants, the ovule develops to become the fruit.
4. Sound pitch depends on the amplitude of the source.
5. A complete oscillation comprises of two amplitudes.
6. The angle between the incident light ray and the reflected light ray = 100° , so the angle of reflection = 60°

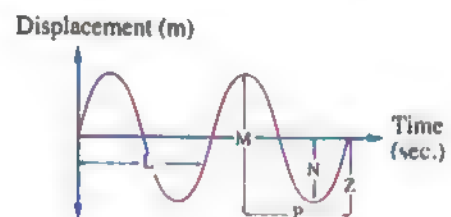
B Compare between each of the following :

1. Mechanical waves and electromagnetic waves (according to the medium of propagation and the speed).
2. Pollination by air and pollination by insects (two characteristics of the flower).

C The opposite figure represents an oscillatory motion for a simple pendulum.

Choose the letter that denotes :

1. The oscillation of the pendulum forming $\frac{3}{4}$ complete oscillation.
2. The amplitude.



Question 3

A Write the scientific term :

1. The property by which the ears can distinguish between sounds with respect to the nature of the source even if they are equal in pitch and intensity.
2. A natural phenomenon takes place on the desert roads at noon especially in the summer times.
3. The motion produced as a result of the vibration of the particles of the medium at a certain moment and in a certain direction.
4. Sound waves of frequencies less than 20 Hz.
5. Short stem where leaves are developed and modified into reproductive organs.
6. A genital disease caused by spiral bacteria.

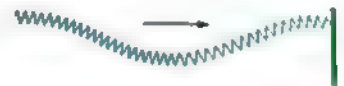
B Choose the correct answer to complete the following statements :

1. The quantum of energy of green light is the quantum of energy of yellow light.

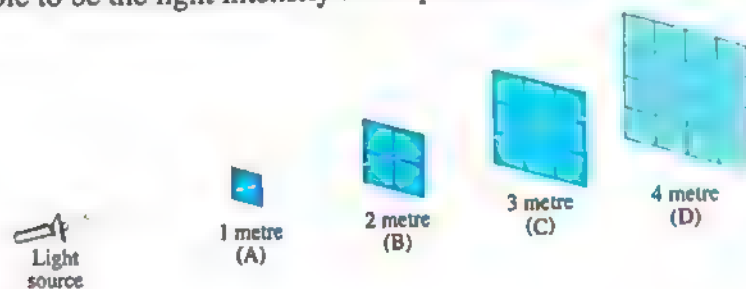
a. greater than	b. equal to	c. less than	d. no correct answer
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2. Light waves are waves.

a. mechanical transverse	b. electromagnetic longitudinal
c. electromagnetic transverse	d. mechanical longitudinal

3. The result of multiplying the frequency of an oscillating body by its periodic time equals
 a. variable value. b. negative value. c. constant value. d. one.
4. A sound wave travels in air with velocity 330 m/s and has a wavelength of 0.1 m, its frequency is
 a. 330 KHz. b. 3300 Hz. c. 33 KHz. d. 330 Hz.
5. In the opposite figure, the particles of the medium (the coil) vibrate
 a. to the right only. b. upwards only.
 c. to right and left. d. upwards and downwards.

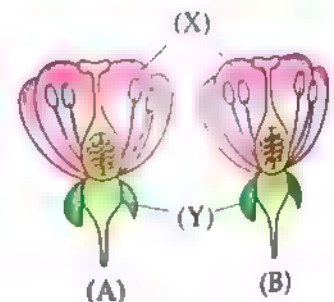


6. Calculate the absolute refractive index of diamond given that the speed of light in it $= 1.25 \times 10^8$ m/s and the velocity of light in air equals 3×10^8 m/s.
7. In the following figure, the light intensity of the surface at point (A), equals the unity. Choose from the following values : $(\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{6}, \frac{1}{9}, \frac{1}{12}, \frac{1}{16})$
 What is suitable to be the light intensity at the points (B), (C) and (D) ?



Question 4

- A Give reasons for :
1. Palm flowers are unisexual.
 2. The light ray that is incident perpendicular on a glistening surface reflects on itself.
 3. Oscillatory motion is considered as a periodic motion.
- B Savart's wheel rotates with a rate of 300 cycles per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear, calculate the number of teeth of the gear.
- C The opposite figure shows two flowers of two plants of the same species :
1. What's the function of the parts (X) and (Y) ?
 2. Pollen grains from the flower (A) are transferred to the ova in flower (B) :
 a. What's the type of pollination that happened ?
 b. What's the sex of flower (A) ?



Answer the following questions :

Question 1

A Choose the correct answer:

1. All of the following are factors affecting sound intensity except the
 - a. amplitude of vibration.
 - b. medium intensity.
 - c. frequency.
 - d. wind direction.
2. We can determine the speed of wave propagation from the relation : Speed =
 - a. $\frac{\text{Wavelength}}{\text{Frequency}}$
 - b. $\frac{\text{Frequency}}{\text{Wavelength}}$
 - c. Frequency + Wavelength.
 - d. Frequency \times Wavelength.
3. The ovule after fertilization becomes a
 - a. seed.
 - b. seed coat.
 - c. fruit.
 - d. coat of fruit.
4. The amplitude of the simple pendulum is of a complete vibration.
 - a. four times
 - b. a quarter
 - c. a half
 - d. double

B Compare between : Sonic waves and ultrasonic waves.

C Mention the importance of :

1. Savart's wheel. 2. Glass prism.

Question 2

A Write the scientific term :

1. The ability of the medium to refract light rays.
2. A new method to produce large numbers of plants from a small part of it.
3. The periodic motion made by a body around its point of rest, where the motion is repeated through equal intervals of time.
4. A property of sound by which the ear can distinguish between sharp and rough sounds.

B Give reasons for :

1. Flowers pollinated by insects produce coarse pollen grains.
2. We see lightning before hearing thunder.
3. The piano sound differs from that of the violin even if they have the same intensity and pitch.
4. The energy of red light photon is less than that of orange light photon.

Question 3

A Correct the underlined words :

1. The absolute refractive index of any transparent medium is always less than one.
2. Reproduction by tubers happens in orange and bitter orange.

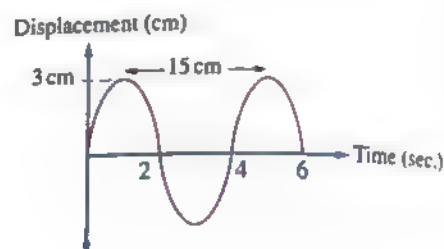
3. The wave that propagates along the direction of vibration of the medium particles is called transverse wave.
4. Light travels in curved lines.

B What happens when ... ?

1. Light ray falls perpendicular on a reflecting surface.
2. The oscillating body passes its rest position during its movement (concerning its velocity).

C From the opposite figure, calculate :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Periodic time.



Question 4

A What is meant by ... ?

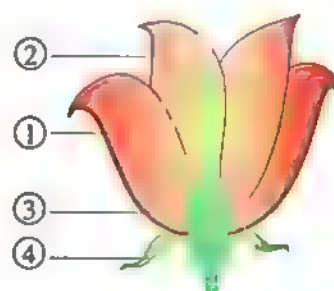
1. The distance that is covered by a visible light wave in space in two seconds is 6×10^8 metres.
2. The angle of refraction of a light ray = 60°
3. The time taken by a spring to make 60 complete oscillations is 1 minute.

B Cross out the odd word, then write down the relation between the rest of words :

1. Ovary / Style / Stamen / Stigma.
2. Simple pendulum motion / Spring motion / Rotary bee motion / Stretched string motion.
3. Development of breasts / Harshness of voice / Menstrual cycle / Growth of hair in armpit and pubic.

C Label the figure :

- ①
- ②
- ③
- ④



Answer the following questions :

Question 1

A Complete the following statements :

1. Sound is from waves that can't travel through
2. In the flower, the calyx consists of , but a group of petals forms

3. The high pitched sound waves have high and small
 4. Waves are classified according to their ability to propagate and transfer energy into and
 5. Light is the change of light path when it travels from a transparent medium to another one of different
- B** Calculate the speed of light through diamond given that the absolute refractive index of it = 2.4 and the speed of light through air = 3×10^8 m/s.
- C** Compare between the following :
1. Regular reflection and irregular reflection (direction of the reflected rays).
 2. Longitudinal waves and transverse waves (direction of vibration of medium particles).
 3. Zygote and pollen grain (the number of genetic material).

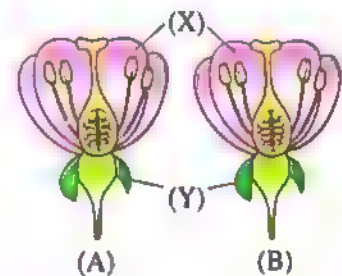
Question 2

A Correct underlined words :

1. Complete oscillation consists of $\frac{1}{4}$ amplitude.
2. The motion of the rotary bee is considered as an oscillatory motion.
3. The infrasonic waves are used in breaking down kidney stones.
4. Sound pitch is increased by decreasing the frequency.
5. Speed of sound in water is slower than in air.

B Look at the opposite figure, then answer the following :

1. What is the function of the parts (X) and (Y) ?
2. Pollen grains from flower (A) are transferred to the ova in flower (B) :
 - a. What is the type of pollination that happened ?
 - b. Write two methods for this kind of pollination.
 - c. What is the sex of the flower (B) ?
 - d. Write the name of two plants having the same sex of flower shown in the figure.



Question 3

A Write the scientific term :

1. A property by which the ear can distinguish between strong and weak sounds.
2. The angle between the reflected ray and the normal at the incidence point on the reflecting surface.
3. A disturbance causes the vibration of the medium particles.
4. The measuring unit of the sound intensity.

B Give reasons for :

1. We can distinguish between different sounds even if they have the same pitch and intensity.

2. We see lightning before hearing thunder.
3. Appearance of secondary female sex characters in human.

C What happens when ... ?

1. Increasing the wavelength four times for the same velocity (concerning the wave frequency).
2. Falling of a pollen grain on a stigma of the same flower (the type of pollination).

D Calculate the frequency of a musical tone similar to the tone produced from Savart's wheel rotating with a velocity of 960 cycles in two minutes, knowing that the number of gear teeth = 30 teeth.

Question 4

A Choose the correct answer :

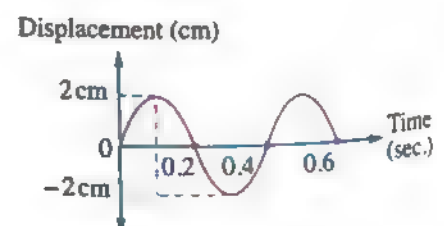
1. The ratio between the periodic time of a tuning fork vibrates with 100 Hz, and the periodic time of another tuning fork vibrates with 200 Hz equals
 a. 1 : 1 b. 2 : 1 c. 1 : 2 d. zero
2. The zygote contains of the genetic material of the sperm.
 a. half b. double c. quarter d. three times
3. The light ray refracts the normal when it travels from air to glass.
 a. near to b. away from c. perpendicular to d. along
4. All of the following are from the factors affecting sound intensity except the
 a. amplitude. b. frequency. c. density of medium. d. wind direction.
5. Sound wave of frequency 400 Hz and wavelength 85 cm, so its velocity =
 a. 340 m/s. b. 34000 m/s. c. 3.4 m/s. d. 0.034 m/s.

B Put (✓) or (x) and correct the wrong ones :

1. The fish is seen higher than its real position in the fish tank. ()
2. The complete oscillation includes four successive amplitudes. ()
3. The velocity of the oscillating body is maximum when it passes through the original position. ()
4. Androecium is the female reproductive organ in plant. ()
5. Sperms move from the vagina to fallopian tubes through the uterus. ()
4. The age of menopause in female ranges between 11 to 14 years. ()

C From the opposite figure, calculate :

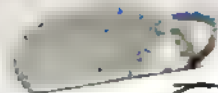
1. Amplitude.
2. Periodic time.
3. Frequency.



PART

3

Guide Answers of Final Examinations



Test

A+



Guide Answers of Final Examinations

2020

Calro Governorate

1. Manor House International School

1. regular (uniform) reflection - irregular (non-uniform) reflection.
2. the female cell - zygote.
3. mechanical waves - electromagnetic waves.
4. 65°
5. estrogen
1. Infrasonic waves.
2. Amplitude
3. Speed of light.
4. Periodic time
5. Calyx.
6. The crest
7. Light refraction.

1. It is the property by which the ear can distinguish (differentiate) between harsh and sharp voices.
2. It is the disturbance that propagates and transfers energy in the direction of propagation.
3. It is the process of transfer of pollen grains from the flower anthers to the stigmas
4. The frequency of the oscillating body is $\left(\frac{200}{120}\right)$ which equals 1.6 Hz
5. It is the rebounding of light waves in the same medium on meeting a reflecting surface.

1. incidence
2. 20
3. Carpel
4. longitudinal

1. The velocity of sound decreases
2. It will germinate forming a pollen tube
3. It will reflect on itself.
4. Its velocity increases to the maximum value
1. Because the density of carbon dioxide gas is more than that of air, since sound intensity is directly proportional to the density of the medium
2. Because the flower contains only male or female reproductive organ
3. It is a periodic motion because it is repeated regularly in equal time intervals, but it is not an oscillatory motion because it is not repeated on the two sides of its rest position.
4. Because light waves are electromagnetic waves which do not need a medium to propagate through.
5. To attract insects to the flower which help in the sexual reproduction process.

6. Because the individuals coming from asexual reproduction are identical to the parent, while in human each individual differs from others

2. Look at the main book on page (44, 45).

1. Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{600 \times 60}{300} = 120 \text{ teeth}$$

2. Basateen & Dar Al-Salam Zone

1. d
2. b
3. c
4. d
5. a
6. d
7. b
8. c
9. c
10. c
11. d
12. a

1. Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{600 \times 60}{300} = 120 \text{ teeth.}$$

1. The distance between the centres of two successive compressions or two successive rarefactions is 30 cm (0.3 m)
2. The angle between the reflected light ray and the line perpendicular to the reflecting surface at the point of incidence = 45°
1. Rotary bee motion, the rest are Oscillatory motions
2. Sound wave, the rest are Electromagnetic waves
3. Air, the rest are Opaque media
4. Palms, the rest are Bisexual (hermaphrodite) flowers
5. Root, the rest are Parts of the flower
- (0.8), because the refractive index of any material is greater than one
1. Fallopian tube
2. Uterus
3. Uterus muscles.
4. Cervix
2. It protects and nourishes the fetus during the pregnancy until birth.

1. Vegetative reproduction.
2. Zygote

3. Optical density of the medium.
4. Irregular (non-uniform) reflection.
5. Light intensity.
6. Wave amplitude.
7. Sound pitch
8. Frequency

1. c 2. b 3. d 4. b

6 No. (3), because it doesn't contain the ovary which develops and becomes the fruit after fertilization process.

1. maximum
2. crests – troughs.
3. 20 Hz – 20 KHz.
4. pitch – intensity
5. less
6. higher – lower
7. self (auto) pollination – mixed (cross) pollination.

Refractive index of diamond

$$= \frac{\text{Velocity of light through air}}{\text{Velocity of light through diamond}}$$

$$= \frac{3 \times 10^8}{1.25 \times 10^8} = \frac{3}{1.25} = 2.4$$

1. Because their anthers and stigmas are not matured at the same time.
2. Because angle of incidence = angle of reflection = zero.
3. Because the frequency of red light photon is less than that of violet light photon.
4. Because they have high ability to kill some types of bacteria and stop the action of some viruses.

1. 60° 2. inverse

3 El-Ma'aref Language School

1. the velocity of light through air – the velocity of light through another transparent medium.
2. refraction – the normal at the point of incidence on the interface.
3. decibel – second
4. transverse – centre of compression

1. It analysis the white light into seven spectrum colours
2. Breaking down kidney and ureter stones without any surgical operations.
3. It is used to treat sprains and cramps by using hot water.

4. They are used to avoid hazards of noise in loud places.

1. equal to
2. the refraction of light rays.
3. Periodic
4. Inference
5. Testes

1. Tissue culture.
2. Optical density of the medium.
3. Wave motion.
4. Sound.
5. Pollination.
6. Mirage.
7. Savart's wheel.
8. Calyx.

1. Because the ovary of olive contains only one ovule, while that of bean contains many ovules.
2. Because angle of incidence = angle of reflection = zero.
3. They are transverse because the medium particles vibrate perpendicular to the direction of wave propagation forming crests and troughs and mechanical because they need a medium to propagate through
4. To direct the ovum towards the uterus

Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{600 \times 60}{300} = 120 \text{ teeth.}$$

1 Look at the main book on page (164).

1. The distance between the centres of two successive compressions or two successive rarefactions is 25 cm (0.25 m)
2. It is the maximum displacement done by the oscillating body away from its rest position.
3. It is the property by which the ear can distinguish (differentiate) strong or weak sounds.

1. c 2. d 3. a
4. b 5. b 6. a
7. d

1. (x) oscillatory motion.
2. (x) four whorls.
3. (x) a fruit.
4. (✓)
5. (x) Violin is

1 Look at the main book on page (85)

1. ① Receptacle. ② Ovule.
③ Stigma. ④ Petal
⑤ Filament.
2. Hermaphrodite flower

4 Abdeen Patriarchal College.

1. perpendicular to
2. a petal.
3. four – amplitude.
4. absolute refractive index of a medium
5. refraction – normal to the surface
6. calyx – sepals.

1. The ovary will grow to become a fruit and the ovule will develop to become a seed
2. The wavelength decreases to its half value.
3. It will reflect on itself
4. The white light analysis into seven colours

The absolute refractive index of water

$$= \frac{\text{Velocity of light through air}}{\text{Velocity of light through water}}$$

$$1.33 = \frac{\text{Velocity of light through air}}{2.25 \times 10^8}$$

$$\text{Velocity of light through air} = 1.33 \times 2.25 \times 10^8 = 3 \times 10^8 \text{ m/sec}$$

1. Optical density of the medium
2. Bisexual (hermaphrodite) flower
3. Wave motion.
4. Complete oscillation.
5. Infrasonic waves.
6. Sound quality (type)

1. The frequency of the oscillating body is $\left(\frac{540}{90}\right)$ which equals 6 Hz.
2. It is the process of fusion of the nucleus of the male cell with the nucleus of the female cell to form the zygote
3. It is a natural phenomenon that takes place on the desert roads at noon especially in the summer times, where objects on the road sides seem as if they have inverted images on a wet area
4. They are tones that accompany the fundamental (basic) tone but they are higher in pitch and lower in intensity and differ from one instrument to another.

Answers of Final Examinations

1. Periodic time = $\frac{\text{Time in seconds}}{\text{Number of complete oscillations}}$
 2. Sound intensity = $\frac{1}{\text{Square of the distance}}$

1. Because the ovary of pea contains many ovules
2. Because it is an opaque medium.
3. To ensure the pollination process, as pollination is difficult to occur by insects or by air.
4. To catch pollen grains from air.

Wave velocity = Wave frequency \times Wavelength
 Wave frequency of the first wave = $\frac{340}{1.7} = 200 \text{ Hz}$
 Wave frequency of the second wave = $\frac{340}{20} = 17 \text{ Hz}$

The first wave is audible, because its frequency lies within the range of sounds heard by man (from 20 Hz to 20 KHz), while the second wave is non-audible, because its frequency lies within the range of sounds that the human ears can't hear (less than 20 Hz)

Angle of reflection of the ray falls on mirror (Y) = 50°

1 Look at the main book on page (169)

P.O.C.	Frequency	Periodic time
Definition:	It is the number of complete oscillations made by an oscillating body in one second	It is the time taken by an oscillating body to make one complete oscillation
The rule:	Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$	Periodic time = $\frac{\text{Time in seconds}}{\text{Number of complete oscillations}}$

3 Look at the main book on page (46)

1. a 2. b 3. b
4. a 5. a
1. B & H
2. B & C – E & F
3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{0.2} = 5 \text{ Hz}$
1. ① Head
② Midpiece
③ Tail

2. It is responsible for the movement of the sperm till it reaches the ovum.

5 Heliopolis Patriarchal College

1. high - low
2. transverse - centre of compression
3. Androecium - gynoecium
4. intensity - pitch
1. Because it takes place via parts of roots, stem, leaves or buds
2. Because the number of complete oscillations is inversely proportional to the periodic time
3. Due to the refraction of light rays coming from the immersed part in water, where the eye sees the immersed part of the pen on the extensions of these refracted rays.
4. Because they have high ability to kill some types of bacteria and stop the action of some viruses.
- Velocity of sound = Frequency \times Wavelength
= $400 \times 0.85 = 340$ m/sec

1. The flower 2. Decibel.
3. Longitudinal wave. 4. Typical flower
5. Fertilization

Mechanical waves	Electromagnetic waves
- They need a medium to propagate.	- They do not need a medium to propagate.
- They do not propagate through vacuum.	- They propagate through vacuum
- They are transverse or longitudinal waves	- They are transverse waves only
- Their velocity is relatively low.	- Their velocity is great (3×10^8 m/sec.).
Ex. : Water waves (transverse waves).	Ex. : Visible light waves.
• Sound waves (longitudinal waves)	• Infrared waves.
	• Radio waves (used in radars)

Grafting by attachment	Grafting by wedge
- In which the scion is attached to the stock.	- In which the scion in the form of a wedge is inserted into a cleft in the stock.
- Ex. : Mango trees.	- Ex. : Large trees.

1. It is the distance between the centres of two successive compressions or rarefactions
2. It is the maximum displacement done by the oscillating body away from its rest position.

1. d 2. b 3. c 4. d 5. a

1. Wavelength = $\frac{\lambda}{2} = 2$ m.
2. Frequency = $\frac{\text{no. of waves}}{\text{time}} = \frac{1}{2} = 0.5$ Hz
3. Amplitude = 1 m.
4. Wave velocity = Wavelength \times Frequency
= $2 \times 0.5 = 1$ m/sec.

1. The angle between the incident light ray and the line perpendicular to the reflecting surface at the point of incidence is 30°
2. The frequency of the oscillating body is $\left(\frac{500}{10}\right)$ which equals 50 Hz.
3. It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

1. Protection of the inner parts of the flower specially before blooming
2. It is used to determine the pitch (frequency) of an unknown tone.
3. They are used to avoid the hazards of noise in loud places.

1. - Light reflection : The angle of incidence equals the angle of reflection.
- Light refraction : The angle of incidence does not equal the angle of refraction
2. - Natural vegetative reproduction : It takes place by many ways such as, reproduction by : rhizomes, culms, tubers, bulbs and offshoots.
- Artificial vegetative reproduction : It takes place by four ways which are cutting, grafting, tissue culture and layering.

- Sound frequency (F)
= $\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
= $\frac{200 \times \text{Number of gear teeth}}{60}$
100 = $\frac{60}{\text{Number of gear teeth}} \times 100 \times 60$
Number of gear teeth = $\frac{100 \times 60}{200} = 30$ teeth.

1. The intensity of sound decreases to its quarter.

2. It will germinate forming a pollen tube
3. The sperms will die during their passage through the urethra and the individual becomes infertile.

1. fundamental (basic) tone. 2. watt/m²
3. Reproduction 4. Mirage
5. carpel 6 petals

1. anther
2. ① Filament. ② Pollen chamber
③ Pollen grains

1. Wavelength 2. Photon energy

6 El Seddeek Language School

1. Wave velocity
2. The flower
3. Infrasonic waves
4. Amplitude 5. Mirage
6. Cross pollination

1. The discovery of landmines
2. It protects the inner parts of the flower specially before blooming

1. Amplitude = 10 cm = 0.1 m
2. Periodic time = 0.4 sec
3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{0.4} = 2.5$ Hz

4. Wave velocity = $\frac{\text{Distance covered by the wave}}{\text{Time}}$
= $\frac{16}{0.8} = 20$ cm/sec
= 0.2 m/sec

1. d 2. a 3. c
4. c 5. d 6. b
7. c 8. a

1. The zygote will be formed.
2. The periodic time decreases

- Sound frequency (F)
= $\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
200 = $\frac{60 \times \text{Number of gear teeth}}{30}$
Number of gear teeth = $\frac{200 \times 30}{60} = 100$ teeth.

1. Because sound travels through air as spheres of compressions and rarefactions whose centre is the sound source.
2. Because the velocity of light through air is always greater than that through diamond.

Answers of Final Examinations

3. Because the flower contains only male or female reproductive organ
4. Because it is repeated regularly in equal periods of time.
5. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves)
6. Because it regulates and keeps the temperature of testes 2°C below the normal body temperature, which is the optimum temperature for the growth and development of sperms

1. It is the motion of an oscillating body when it passes by a fixed point on its path two successive times in the same direction
2. It is the process of fusion of the nucleus of the male cell with the nucleus of the female cell to form the zygote
3. They are sound waves of frequencies higher than 20 KHz
4. It is the reflection of light rays when they meet (fall on) a smooth (uniform) and glistering reflecting surface, where the incident light rays are reflected in one direction.

- The absolute refractive index of water
= $\frac{\text{Velocity (speed) of light through air}}{\text{Velocity (speed) of light through water}}$
= $\frac{3 \times 10^8}{1.333 \times \text{Velocity (speed) of light through water}}$
Speed of light through water = $\frac{3 \times 10^8}{1.333}$
= 2.25×10^8 m/s

1. Ultrasonic 2. 0.4
3. transverse electromagnetic - longitudinal mechanical
4. Air - opaque 5. a seed
6. 28

1. (x) 2. (✓) 3. (✓)

1. The energy of red light is smaller than the energy of violet light
2. - Longitudinal wave : The particles of the medium vibrate along the direction of wave propagation
- Transverse wave : The particles of the medium vibrate perpendicular to the direction of wave propagation.

Giza Governorate

7 6th of October Educational Zone

1. a. b 2. c 3. a 4. b 5. d
6. c 7. d 8. b 9. b

- (a) Bisexual (hermaphrodite) flower.
(b) Female flower.
(c) Male flower.

Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$
 $= \frac{300}{100} = 3 \text{ Hz.}$

1. Ultrasonic
2. reproduction by tubers
3. 20 4. straight
6. oscillatory motion.

Sound frequency (F)
 $= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$

$100 = \frac{300 \times \text{Number of gear teeth}}{60}$
 Number of gear teeth = $\frac{100 \times 60}{300} = 20 \text{ teeth.}$

1. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
 2. Because the frequency of violet light is greater than that of red light.
 3. To adhere on the insect's body
 4. Because it is responsible for movement of the sperm till it reaches the ovum.

1. mechanical – electromagnetic
2. four 3. photons.
4. regular (uniform) – irregular (non-uniform)
5. air – another transparent medium.
6. sepals, 7. filament,
8. testosterone.

1. The ovary will grow to become a fruit.
2. The ovule will become a seed.

- Longitudinal wave : It consists of compressions and rarefactions.
 - Transverse wave : It consists of crests and troughs.

1. Amplitude
2. Oscillatory motion.
3. Mechanical waves.

4. Sound intensity.
5. Light reflection.
6. The inverse square law of light
7. Angle of incidence of light ray.
8. Self pollination.

1. Angle of incidence = zero
2. Angle of reflection = zero

1. It is the time taken by an oscillating body to make one complete oscillation.
 2. It is the process of fusion of the nucleus of the male cell with the nucleus of the female cell to form the zygote

8 Beverly Hills Language School

1. watt/m² – decibel.
2. zygote.
3. transverse – centre of compression
4. pitch
5. 20 – 20000
6. the square of the distance – the frequency

1. - Mechanical waves : They need a medium to propagate
 - Electromagnetic waves : They do not need a medium to propagate
 2. - Self pollination : It is the transfer of pollen grains from the anthers of a flower to the stigmas of the same flower or to another flower in the same plant.
 - Mixed pollination : It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind

1. The wave.
2. Amplitude.
3. The flower.
4. Angle of emergence.
5. Wave velocity
6. The first law of light reflection.

Sound frequency (F)
 $= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$

$= \frac{400 \times 40}{4} = 4000 \text{ Hz}$

1. Amplitude = 3 m.
2. Periodic time = 4 sec.
3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{4} = 0.25 \text{ Hz.}$
4. Wavelength = 4 m.

5. Wave velocity = Wavelength \times Frequency
 $= 4 \times 0.25 = 1 \text{ m/sec.}$

6. It is a transverse wave.

1. c 2. a 3. b 4. b 5. b 6. c

1. It will reflect on itself.
2. The ovary will grow to become a fruit
3. It will refract far from the normal

- The intensity of sound at a point is inversely proportional to the square of the distance between that point and the sound source

1. Part (X) : Corolla (petals)
Part (Y) : Calyx (sepals)

2. Part (X) :
 - Protection of reproductive organs of the flower
 - Attraction of insects to the flower, which help in the reproduction process
 Part (Y) : Protection of the inner parts of the flower specially before blooming

3. Flowers (A) and (B) are bisexual (hermaphrodite) flowers

1. To catch pollen grains from air
2. Because it is repeated regularly in equal periods of time.
3. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
4. Due to the difference in harmonic tones that associate the fundamental tone of each of them.

1. The male reproductive system.

2. ① Testis.
② Penis.
③ Urinary genital opening.
④ Vas deferens.
⑤ Urinary bladder.
⑥ Prostate gland.

9 Al-Hotakbal Modern Language School

1. four – amplitude.
2. 20 – 20
3. high – low
4. self (auto) pollination – mixed (cross) pollination.

Answers of Final Examinations

1. It is the process of fusion of the nucleus of the male cell with the nucleus of the female cell to form the zygote
 2. It is a motion which is regularly repeated in equal periods of time
 3. Angle of incidence = Angle of reflection

Periodic time = $\frac{\text{Time in seconds}}{\text{Number of complete oscillations}}$
 $= \frac{60}{600} = 0.1 \text{ sec}$

1. c 2. b 3. b 4. c 5. c 6. b

Regular reflection	Irregular reflection
It is the reflection of light rays when they fall on a smooth (uniform) and glimmering reflecting surface, where the incident light rays reflected in one direction.	It is the reflection of light rays when they fall on a rough (non-uniform) reflecting surface, where the incident light rays are reflected in different directions.

Sound frequency (F)
 $= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
 $= \frac{120 \times 30}{60} = 60 \text{ Hz}$

- (a) Bisexual flower (♂), because it contains male and female reproductive organs.
 (h) Female flower (♀), because it contains female reproductive organ only
 (c) Male flower (♂), because it contains male reproductive organ only

1. Because clear glass permits most light to pass through and objects can be seen clearly through it
 2. Due to the difference in the harmonic tones that associate the fundamental tone produced from the source of sound.
 3. Because the velocity of light through air is always greater than that through any other transparent medium
 4. Because the flowers contain only male or female reproductive organ
 5. Because angle of incidence = angle of reflection = zero

1. Production of pollen grains.
 2. In medical field .
 - Breaking down kidney and ureter stones without any surgical operations.

- Diagnosis of male prostate gland tumors and its effect on bladder
- Discovering malignant tumors.
- In military field : Discovering of landmines.
- 3. Receiving the ripe ovum and pushing it towards the uterus with the aid of :
 - The contraction and relaxation of the muscles in the tube wall.
 - The movement of the lining cilia.
- 4. Production of sperms and testosterone hormone

1. Self pollination. 2. Watt/m².
3. Frequency 4. Mirage.
5. Amplitude. 6. Light refraction.

1

Mechanical waves	Electromagnetic waves
<ul style="list-style-type: none"> - They need a medium to propagate - They do not propagate through vacuum. They are transverse or longitudinal waves. - Their velocity is relatively low. 	<ul style="list-style-type: none"> - They do not need a medium to propagate - They propagate through vacuum They are transverse waves only. - Their velocity is great (3×10^8 m/sec.).
Ex. : • Water waves (transverse waves). • Sound waves (longitudinal waves).	Ex. : • Visible light waves. • Infrared waves. • Radio waves (used in radars)

- 1 Wavelength = $\frac{4}{2} = 2$ m.
2 - Periodic time = $\frac{4}{2} = 2$ sec.
- Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{2} = 0.5$ Hz.
3. Amplitude = 1 m.
4. Wave velocity = Wavelength \times Frequency
= $2 \times 0.5 = 1$ m/sec

10 Orouba Language School

1. b 2. c 3. b 4. b
5. c 6. b 7. c 8. d
9. a 10. c 11. c 12. b

1. Because sound waves need a medium to propagate through, while radio waves don't need a medium to propagate through.
2. Because the density of carbon dioxide gas is more than that of air, since sound intensity is directly proportional to the density of the medium.

3. Because dolphins produce ultrasonic waves, while the human ears can't hear sounds of frequencies more than 20 kilohertz.
4. Because the angle of incidence = zero.
5. Due to reflection and refraction of light in air layers which differ in the degree of temperature.
6. Because light waves are electromagnetic waves which do not need a medium to propagate through.

1. Testis.
2. The pregnancy period

1. Concentric circles propagate on the water surface.
2. It appears as being broken
3. Tumors will appear in different body parts like the liver, bones and parts of genital system, the brain may also be damaged and the patient will die.

Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$
$$6 = \frac{\text{Number of complete oscillations}}{2 \times 60}$$

Number of complete oscillations = $6 \times 120 = 720$ oscillations

1. Look at the main book on page (93)
2. Look at the main book on page (113)

1

Points of comparison	Transverse waves	Longitudinal waves
• Definition :	It is a disturbance in which the particles of the medium vibrate perpendicular to the direction of wave propagation.	It is a disturbance in which the particles of the medium vibrate along the direction of wave propagation.
• Composition :	Crests and troughs.	Compressions and rarefactions.
• Wavelength :	It is the distance between two successive crests or troughs.	It is the distance between the centres of two successive compressions or rarefactions.
• Examples :	Water waves.	Sound waves.

Answers of Final Examinations

2

Points of comparison	Regular reflection	Irregular reflection
1 The texture of the reflecting surface	Smooth and glazing	Rough
2 The direction of the reflected rays	The incident light rays are reflected in one direction	The incident light rays are reflected in different directions

1. The rarefaction
2. Mirage
3. Violet colour
4. Opaque bodies.
5. Tissue culture
6. Zygote

1 Amplitude = 1 m.
2 Periodic time = 2 sec
3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{2} = 0.5$ Hz
4. Wavelength = $\frac{4}{2} = 2$ m.

1. It will refract near the normal
2. The ovary will grow to become a fruit

1. b 2. c 3. b 4. d 5. b 6. d

1. - Breaking down kidney and ureter stones without any surgical operations.
- Diagnosis of male prostate gland tumors and its effect on bladder tumors.
- Discovering malignant tumors.
2. It is used to treat sprains and cramps by using hot water and nervous tension by using cold water
3. It analysis the white light into seven spectrum colours.
4. - Protection of reproductive organs of the flower
- Attraction of insects to the flower, which help in the reproduction process.

Sound frequency (F) = $\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

Number of gear teeth = $\frac{600 \times 60}{300} = 120$ teeth

1. inverse 2. straight
3. greater than 4. air
5. single seed 6. root

2.

Regular reflection	Irregular reflection
It is the reflection of light rays when they fall on a smooth (uniform) and glistening reflecting surface, where the incident light rays are reflected in one direction	It is the reflection of light rays when they fall on a rough (non-uniform) reflecting surface, where the incident light rays are reflected in different directions

1. Angle of incidence = Angle of reflection.
2. It is one of the components of electromagnetic spectrum of wavelength ranges between 380 : 700 nanometres
3. It is a natural phenomenon that takes place on the desert roads at noon especially in the summer times, where objects on the road sides seem as if they have inverted images on a wet area.

- A typical flower.

- 1 Sepal.
2 Petal.
3 Anther.
4 Ovary.

Alexandria Governorate

11 Middle Educational Zone

1. 1. watt/m² 2. increases
3. 20 4. zero.
5. androecium. 6. tubers.

1. Sound waves, the rest are : Electromagnetic waves.
2. Filament, the rest are : Parts of the carpel
3. Epididymis, the rest are : Organs of female genital system.

1.

Auto pollination	Mixed pollination
It is the transfer of pollen grains from the anthers of a flower to the stigmas of the same flower or to another flower in the same plant.	It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

1. Due to the difference in harmonic tones that associate the fundamental tone of each of them.
 2. Because intensity of light is inversely proportional to the square of the distance between the surface and light source.

1. Part (X) : Anther.
 Part (Y) : Sepal.
 2. It protects the inner parts of the flower specially before blooming.
 3. Bisexual (hermaphrodite) flower.

12 El-Agamy Educational Zone

1. 1. decibel – metre.
 2. regular (uniform) reflection – irregular (non-uniform) reflection.
 3. fruit – a seed.
 4. white – seven

1. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
 2. Due to reflection and refraction of light in air layers which differ in the degree of temperature.
 3. To attract insects to the flower which help in the sexual reproduction process.

1. Female reproductive system.
 2. ②
 3. ①
 4. ③

1. b 2. c 3. d 4. c

1. It is used to treat sprains and cramps by using hot water.
 2. Protection of the inner parts of the flower specially before blooming.
 3. It is used to determine the pitch (frequency) of an unknown tone
 4. Producing large numbers of a plant by using a part of it.

1. It will pass without refraction.
 2. The flint glass permits only a part of light to pass through and absorbs the remaining part
 3. Mixed (cross) pollination will occur.

1. 1. Optical density of the medium.
 2. Typical flower. 3. Light refraction.
 4. Sound pitch.

1 Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$300 = \frac{600 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{300 \times 60}{600} = 30 \text{ teeth}$$

1. Palm flower.
 2. Bean fruit.
 3. Clear glass.
 4. Reproduction by tubers.

1. - Transverse waves : They consist of crests and troughs.
 - Longitudinal waves : They consist of compressions and rarefactions.
 2. - Self pollination : It is the transfer of pollen grains from the anthers of a flower to the stigmas of the same flower or to another flower in the same plant.
 - Cross pollination : It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind
 3. - Infrasonic waves : Their frequencies are lower than 20 Hz
 - Ultrasonic waves : Their frequencies are higher than 20 KHz.

1. oscillatory motion.
 2. increases
 3. Red 4. style

Wave velocity = Frequency \times Wavelength
 $= 150 \times 0.1 = 15 \text{ m/sec.}$

1. It is the motion of an oscillating body when it passes by a fixed point on its path two successive times in the same direction
 2. It is the distance which is covered by light in one second.

13 El-Gomrok Educational Zone

1. 1. decibel – watt/m².
 2. pitch (frequency)
 3. catch pollen grains from air
 4. Irregular (non-uniform) reflection
 5. broken.
 6. 60°
 7. 0.125 sec.

1. Because the density of carbon dioxide gas is more than that of air, since sound intensity is directly proportional to the density of the medium.
 2. Because the light rays falls perpendicular to the interface between the two transparent media, so the angle of incidence is equal to the angle of refraction equals zero
 3. Because sound waves need a medium to propagate through, while radio waves don't need a medium to propagate through.
 4. Because it helps in transferring of sperms from the testes to urethra.

2 Absolute refractive index of glass

$$= \frac{\text{Velocity of light through air}}{\text{Velocity of light through glass}}$$

$$= \frac{3 \times 10^8}{2 \times 10^8} = \frac{3}{2} = 1.5$$

1. 1. Optical density of the medium.
 2. The flower.
 3. Infrasonic waves
 4. Mirage.
 5. The inverse square law of light.
 6. Tissue culture.

1. Look at the main book on page (94)
 2. Look at the main book on page (164)

1. It is the process of transfer of pollen grains from the flower anthers to the stigmas
 2. The maximum displacement done by the oscillating body away from its rest position is 3 cm (0.03 m).

1. ① Filament. ② Style.
 ③ Petal.
 2. Self pollination.

1. greater than
 2. 20 . 20000
 3. Bean
 4. root.
 5. Progesterone

1. 1. It will reflect on itself.
 2. It will germinate forming a pollen tube
 3. Its velocity increases to the maximum value.

1. Visible light wave.
 2. Light reflection from a plane mirror.
 3. Pendulum motion.

2 Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{600 \times 60}{300} = 120 \text{ teeth.}$$

Al-Qallabya Governorate

14 Al-Rasab Language School

1. 1. harsh – sharp voices.
 2. sexual reproduction – asexual reproduction
 3. Wave frequency – Wavelength
 4. mechanical – electromagnetic
 5. ovules – ovary. 6. 20 – 20000
 7. Periodic – repeated
 8. green – a sepal

1. 1. incident ray. 2. refracted ray
 3. angle of incidence.
 4. angle of refraction.

1. Look at the main book on page (167)
 2. Look at the main book on page (133)
 3. - Violet light : It has the highest frequency in the spectrum colours.
 - Red light : It has the lowest frequency in the spectrum colours.
 4. - Light waves : - They propagate through vacuum
 - They are transverse electromagnetic waves
 - Sound waves : - They do not propagate through vacuum
 - They are longitudinal mechanical waves

2. 1. Fertilization in plants. 2. Stamen
 3. Ultrasonic waves
 4. Wave amplitude. 5. Corolla.

1. Angle of incidence = 90° – 30° = 60°
 Angle of reflection = 90° – 30° = 60°
 2. Angle of incidence = Angle of reflection
 3. It will reflect on itself

1. (✓)
 2. (x) . of insects pollinated
 3. (x) . the angle of reflection equals 50°
 4. (✓)

1. Flower (a) : Bisexual (hermaphrodite) flower
 Flower (b) : Female flower.

2. Most pollination occurs in (b) and (c) because they are bisexual flowers.
 - Self-pollination occurs in (a) because it is bisexual flower.
 3. Flower c

10 1. c 2. b 3. c 4. a 5. b 6. c

1. Because they have high ability to kill some types of bacteria and stop the action of some viruses.
 2. Because the ovary of olive contains only one ovule, while that of pea contains many ovules.
 3. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
 4. Because the ray which falls perpendicular to the interface passes to air without refraction, so the apparent position is the real position.
 5. To expand as the fetus grows during the pregnancy period.

3. Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$300 = \frac{600 \times 60}{\text{Time in seconds}}$$

$$\text{Time in seconds} = \frac{600 \times 60}{300} = 120 \text{ sec.}$$

$$\text{Time in minutes} = \frac{120}{60} = 2 \text{ min.}$$

2. a. 0.4 sec. b. 2.5 cycle/sec. c. 2 cm

- 4 1. _____ is the gynoecium _____ is three.
 2. _____, it refracts far from the normal, lower optical
 3. _____ of frequency 6 Hz
 4. Sonic waves _____ frequencies ranging from 20 Hz to 20 KHz.
 5. _____ of transparent media, while of translucent media.
 6. _____ higher than

1. Frequency = $\frac{1}{\text{Periodic time}}$
 2. Sound frequency

$$= \frac{\text{Number of cycles} \times \text{Number of gear teeth}}{\text{Time in seconds}}$$
 3. Angle of incidence = Angle of reflection
 4. Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$

1. Sound waves - Electromagnetic waves.

2. White - Spectrum colours
 3. Stamen - Parts of the carpel
 4. Rotary bee motion - Oscillatory motion.

1. The ovary will grow to become a fruit and the ovule will become a seed
 2. The light intensity decreases to its quarter
 3. The wavelength decreases to its half value
 4. The intensity of sound increases.

El-Sharkia Governorate

15 Omar Al-Farouk (O.L.S.)

10 1. g, d

2. transverse - centre of compression
 3. a seed - a fruit. 4. four - amplitude
 5. watt m² - decibel.

1. It is used to determine the pitch (frequency) of an unknown tone
 2. Protection of the inner parts of the flower specially before blooming
 3. - Protection of reproductive organs of the flower.
 - Attraction of insects to the flower, which help in the reproduction process
 4. It is used to treat :
 - Sprains and cramps by using hot water
 - Nervous tension by using cold water.

20 1. Tissue culture.

2. Artificial pollination
 3. Max Planck. 4. The flower
 5. Periodic time. 6. Zygote.
 7. Optical density of the medium.
 8. Opaque medium.

1. - Self pollination : It is the transfer of pollen grains from the anthers of a flower to the stigmas of the same flower or to another flower in the same plant.

- Mixed pollination : It is the transfer of pollen grains from the anthers of a flower to the stigmas of another flower in other plant of the same kind.

2. - Red colour : - It has the lowest deviation in the spectrum colours.
 - It is the closest to the prism apex.

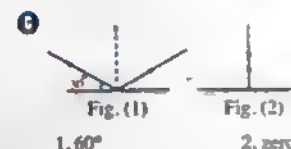
- Violet colour : - It has the highest deviation in the spectrum colours
 - It is the closest to the prism base

3. Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}}$

$$= \frac{300}{30} = 10 \text{ Hz}$$

- 10 1. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves)
 2. Because they have high ability to kill some types of bacteria and stop the action of some viruses
 3. Because the flowers contain only male or female reproductive organ

1. The ratio between the velocity of light through air to that through water is 1.33
 2. The distance between the centres of two successive compressions or two successive rarefactions is 1.5 m.



1. 60° 2. zero

- 10 1. a 2. b 3. c 4. d 5. a 6. b
 1. The anther will split longitudinally and pollen grains will spread in air like dust
 2. It will refract near the normal
 3. Its velocity increases to the maximum value.

6. Wavelength = $\frac{\text{Wave velocity}}{\text{Frequency}} = \frac{3 \times 10^8}{6 \times 10^{14}} = 5 \times 10^{-7} \text{ m}$

El-Menofia Governorate

16 Kowesma Educational Zone

- 10 1. compressions - rarefactions.
 2. mechanical - electromagnetic
 3. self (auto) pollination - mixed (cross) pollination.
 4. watt/m² - decibel.
 5. female - carpels.

Answers of Final Examinations

1. Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{10}$$

$$\text{Number of gear teeth} = \frac{600 \times 10}{300} = 120 \text{ teeth}$$
 1. It will reflect on itself
 2. The wavelength decreases to its half value

20 1. a 2. c 3. c 4. b 5. c

1. Wavelength = $\frac{1}{2} = 2 \text{ m}$
 2. Periodic time = 2 sec
 3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{2} = 0.5 \text{ Hz}$
 4. Wave velocity = Wavelength \times Frequency
 $= 2 \times 0.5 = 1 \text{ m/sec.}$

5. Amplitude = 1m

1. It is the property by which the ear can distinguish (differentiate) between harsh and sharp voices
 2. It is a kind of artificial vegetative reproduction in which a part of plant which contains more than one bud known as scion is selected to be placed on a branch of another plant known as the stock

- 10 1. Oscillatory motion.
 2. The flower
 3. Transparent medium
 4. Sonic waves
 5. The inverse square law of sound.
 6. Mirage. 7. Max Planck.

1. the angle of reflection.
 2. fertilization
 3. light refraction. 4. potatoes
 5. sound intensity decreases
 6. Inflorescence
 7. Fallopian tubes
 8. sperm

1. - Musical tones : Tones of uniform frequency
 - Noises : Sounds of non-uniform frequency
 2. - Vegetative reproduction : Asexual reproduction.
 - Flowering reproduction : Sexual reproduction

- 10 1. To catch pollen grains from air

- Because the velocity of light through air is always greater than that through any other transparent medium.
- Due to the difference in harmonic tones that associate the fundamental tone of each of them.
- Because the frequency of red light photon is less than that of orange light photon.
- Due to light refraction.

1. ① Petal. ② Sepal.
③ Ovary. ④ Anther.
2. Bisexual (hermaphrodite) flower.
3. Protection of the inner parts of the flower specially before blooming.

1. Breaking down kidney and ureter stones without any surgical operations.
2. It is used to treat sprains and cramps by using hot water.
3. It is used to increase the sound intensity of the produced tone.

Al-Gharbeya Governorate

17 Al-Gharbeya Educational Zone

1. 1. sound – longitudinal
2. transverse – centre of compression
3. one – smooth
4. androecium – gynoecium.
1. - Longitudinal wave : The wavelength is the distance between the centres of two successive compressions or rarefactions.
- Transverse wave : The wavelength is the distance between two successive crests or troughs.
2. - Transparent medium : It is the medium which permits most light to pass through.
- Opaque medium : It is the medium that doesn't permit light to pass through.
3. - Pollen grain : - Mobile
- Produced in large numbers
- Ovary : - Not mobile (static).
- Produced in few numbers.
1. Wavelength = 2 m.
2. Frequency = $\frac{\text{Number of complete oscillations}}{\text{Time in seconds}} = \frac{2}{2} = 1 \text{ Hz.}$

3. Amplitude = 1 m.
4. Wave velocity = Wavelength \times Frequency
 $= 2 \times 1 = 2 \text{ m/sec.}$

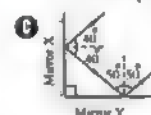
2. 1. d 2. c 3. c 4. a

1. 1. The wavelength decreases to its half value
2. It will refract far from the normal.
3. The anther will split longitudinally and pollen grains will spread in air like dust

2. Sound frequency (F) = $\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
 $= \frac{300 \times \text{Number of gear teeth}}{60}$
Number of gear teeth = $\frac{600 \times (60)}{300} = 120 \text{ teeth}$

3. 1. Oscillatory motion. 2. Amplitude
3. Optical density of the medium
4. The flower.

1. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves)
2. Because angle of incidence = angle of reflection = zero.
3. Because the flower contains only male or female reproductive organ



Angle of reflection on mirror (Y) = 50°

4. 1. (x) 2. (x) 3. (✓) 4. (x)

1. 1. Breaking down kidney and ureter stones without any surgical operations.
2. Protection of the inner parts of the flower specially before blooming.

2. Refractive index of diamond
 $= \frac{\text{Velocity of light through air}}{\text{Velocity of light through diamond}}$
 $= \frac{3 \times 10^8}{1.25 \times 10^8} = \frac{3}{1.25} = 2.4$

1. ① Fallopian tube. ② Uterus.
③ Ovary. ④ Vagina
2. (a) Ovary. (b) Fallopian tube.

Dakahlia Governorate

18 Dakahlia Educational Zone

1. 1. Fertilization. 2. The wave
3. The compression.
4. The flower. 5. Infrasound waves
6. Optical density of the medium
7. Vegetative reproduction
8. Vas deferens

1. Sound frequency (F) = $\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
 $= \frac{960 \times 30}{120} = 240 \text{ Hz.}$

2. ① Anther. ② Style
③ Petal. ④ Sepal
⑤ Ovum.
1. Bisexual (hermaphrodite) flower
2. ♀ 3. Sexual reproduction

1. 1. tissue culture.
2. the velocity of light through air - the velocity of light through another transparent medium
3. directly – frequency 4. Red – violet
5. high – low 6. 2

1. 1. The wavelength decreases to its half value.
2. The ovary will grow to become a fruit
3. It will refract far from the normal
4. The ovule will become a seed.

2. 1. c 2. b 3. a 4. c 5. c
6. c 7. c 8. c

1. 1. It is the process of transfer of pollen grains from the flower anthers to the stigmas.
2. The angle between the refracted light ray and the normal at the point of incidence on the interface equals 45°
3. They are sound waves of frequencies ranging from 20 Hz to 20 KHz (20000 Hz).
4. The distance covered by sound waves in one second is 340 m.

3. 1. (x) 2. (x) 3. (x) 4. (✓)
5. (x) 6. (x) 7. (✓) 8. (x)
9. (✓) 10. (x)

Answers of Final Examinations

1. Velocity of sound = Frequency \times Wavelength
 $= 200 \times 1.7 = 340 \text{ m/sec}$
2. Wavelength = $\frac{\text{Velocity}}{\text{Frequency}} = \frac{1500}{200} = 7.5 \text{ m}$

Ismailia Governorate

19 Ismailia Inspectorate

1. 1. b 2. d 3. d 4. c 5. a 6. b

1. Sound frequency (F) = $\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$
 $= \frac{960 \times 30}{120} = 240 \text{ Hz.}$

2. 1. Protection of the inner parts of the flower specially before blooming
2. It is used to treat sprains and cramps by using hot water
3. Sterilization of food, water and milk

2. 1. - Transparent medium : It is the medium which permits most light to pass through
- Translucent medium : It is the medium which permits only a part of light to pass through and absorbs the remaining part
2. - Noise intensity : Decibel
- Sound intensity : Watt m²

1. 1. The inflorescence. 2. Wave velocity
3. Photon energy 4. Tissue culture
5. Sound pitch.
6. Absolute refractive index of a medium

2. 1. germination of a pollen grain
2. ① Generative nucleus
② Tube nucleus
③ Two male nuclei
④ Pollen tube
3. Parts no. ③

3. 1. 1. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves)
2. To catch pollen grains from air.
3. Due to reflection and refraction of light in air layers which differ in the degree of temperature

1. Electromagnetic – mechanical
2. wave – periodic
3. natural vegetative – artificial vegetative
4. inversely – the square
5. unisexual – bisexual

1.2 2.4 3. Medium (B).

1. The intensity of sound increases.
2. Transverse waves are formed.
3. It will reflect on itself.

1. oscillatory motion. 2. insects.
3. centre of compression 4. higher

1. Amplitude = 5 cm = 0.05 m.
2. Periodic time = $4 \times 2 = 8$ sec.
3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{8}$
= 0.125 Hz

1. Look at the main book on page (195).
2. Look at the main book on page (197).

Port Said Governorate

20 Port Said Educational Zone

1. a 2. d 3. d 4. b 5. d 6. c

1. To attract insects to the flower which help in the sexual reproduction process.
2. Because angle of incidence = angle of reflection = zero.

Wave velocity = Frequency \times Wavelength
 $50 = \text{Frequency} \times 2$
Frequency = $\frac{50}{2} = 25$ Hz.

1. real – apparent
2. white – seven spectrum
3. androecium – gynoecium – androecium
4. high – low 5. amplitude.
6. filament – anther.
7. head – tail.

Look at the main book on page (175).

1. Breaking down kidney and ureter stones without any surgical operations.
2. It is used to determine the pitch (frequency) of an unknown tone.

1. Transverse wave. 2. Frequency.
3. The flower.

4. Optical density of the medium.
5. Mechanical waves
6. Irregular (non-uniform) reflection

1. Part (X) : - Protection of reproductive organs of the flower
- Attraction of insects to the flower, which help in the reproduction process.

Part (Y) : Protection of the inner parts of the flower specially before blooming.

2. a. Mixed (cross) pollination
b. Bisexual (hermaphrodite) flower

1. They are sound waves of frequencies ranging from 20 Hz to 20 KHz (20000 Hz)
2. It is the quantity of light falling perpendicular to a unit area of a surface in one second.

1. (x) Androecium is
2. (x) oscillatory motion. 3. (✓)
4. (x) increases 5. (✓)

1. Wavelength = $\frac{4}{2} = 2$ m
2. Periodic time = 0.2 sec
Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{0.2} = 5$ Hz
3. Amplitude = 1 m
4. Wave velocity = Wavelength \times Frequency
= $2 \times 5 = 10$ m/sec

Damietta Governorate

21 Damietta Educational Zone

1. high – low 2. four – amplitude.
3. the velocity of light through air – the velocity of light through water
4. attachment – wedge. 5. hertz – decibel.

1. Production of pollen grains.
2. - Breaking down kidney and ureter stones without any surgical operations.
3. Producing large numbers of a plant by using a part of it.
4. It is used to determine the pitch (frequency) of an unknown tone.

Wave velocity = Frequency \times Wavelength
= $400 \times 0.85 = 340$ m/sec.

1. Harmonic tones. 2. Mirage.

3. Watt/m²
5. Mixed (cross) pollination

- (1) 1. Longitudinal wave.
2. (A) Rarefaction.
(B) Compression.
3. The wavelength.
4. direction of wave propagation.

- (2) 1. (X) Anther.
(Y) Style.
2. It produces pollen grains
3. - Flower (A) is a female flower.
- Flower (B) is a male flower

1. Female genital system
2. ① Uterus. ② Fallopian tube
③ Ovary. ④ Vagina
3. Label ④

1. a 2. b 3. d 4. a 5. c

1. The light intensity of a surface is inversely proportional to the square of the distance between the surface and the source of light
2. It is the property by which the ear can distinguish (differentiate) between harsh and sharp voices
3. It is a short stem whose leaves are modified to reproductive organs which in turn form seeds inside fruits

1. The white light analysis into seven spectrum colours.

2. It will germinate forming a pollen tube

1. Wavelength = $\frac{4}{2} = 2$ m.

2. Periodic time = 2 sec.
Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{2} = 0.5$ Hz

3. Amplitude = 1 m.

4. Wave velocity = Frequency \times Wavelength
= $0.5 \times 2 = 1$ m/sec.

1. 1. Because it is electromagnetic waves, which don't need a medium to propagate through.
2. Because the flower contains both male and female reproductive organs.
3. Because the density of carbon dioxide gas is more than that of air, since sound intensity is directly proportional to the density of the medium.
4. Because the ovary of peach contains only one ovule.

Answers of Final Examinations

Pollination	Fertilization
It is the process of transfer of pollen grains from the anthers of a flower to the stigmas.	It is the process of fusion of the nucleus of male cell with the nucleus of female cell to form the zygote

Regular reflection	Irregular reflection
It is the reflection of light rays when they fall on a smooth (uniform) and glossy reflecting surface, where the incident light rays are reflected in one direction.	It is the reflection of light rays when they fall on a rough (non-uniform) reflecting surface, where the incident light rays are reflected in different directions

Points of comparison	Transverse wave	Longitudinal wave
• Definition :	It is a disturbance in which the particles of the medium vibrate perpendicular to the direction of wave propagation.	It is a disturbance in which the particles of the medium vibrate along the direction of wave propagation
• Composition :	Crests and troughs.	Compressions and rarefactions
• Wavelength :	It is the distance between two successive crests or troughs.	It is the distance between the centres of two successive compressions or rarefactions
• Example :	Water waves.	Sound waves

1. an opaque medium. 2. frequency
3. sticky. 4. inflorescence
5. potatoes.

El-Behira Governorate

22 Ismail Elhabrouk Language School

1. huge – light.
2. uniform – non-uniform
3. watt/m² – decibel
4. transverse – centre of compression

1. Due to the refraction of light rays coming from the object where the eye sees the fish in an apparent position on the extension of these refracted rays.
2. To attract insects to the flower which help in the sexual reproduction process.
3. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
4. Because during fertilization, they fuse together to form zygote that contains a nucleus of 46 chromosomes (23 pairs of chromosomes).

1. Frequency = $\frac{2}{0.04} = 50 \text{ Hz}$.
2. Wavelength = $\frac{60}{2} = 30 \text{ m}$.
3. Wave velocity = Frequency \times Wavelength
= $50 \times 30 = 1500 \text{ m/sec}$.

1. Water waves – Electromagnetic waves.
2. Sound wave its (F) = 10 Hz – Sonic waves
3. Ovary – Parts of stamens.

1. It is used to treat sprains and cramps.
2. Production of ovules.
3. It is used to determine the pitch (frequency) of an unknown tone.

- 1 (a) 2. 140°
3. The incident light ray, the reflected light ray and the normal to the surface of reflection at the point of incidence, all locate in one plane perpendicular to the reflecting surface.

1. b 2. d 3. a 4. d 5. a 6. c

1. The light rays are reflected in many directions.
2. Its velocity doesn't change.
3. Self pollination occurs.

1. pollen tube. 2. zygote.
3. a seed – a fruit.
4. It is the process of fusion of the nucleus of the male cell (pollen grain) with the nucleus of the female cell (ovum) to form the zygote.

1. zero. 2. potatoes.
3. is directly proportional to the square of the amplitude
4. when it goes far from its rest point.

1 Sound frequency (F) =

$$\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$160 = \frac{960 \times \text{Number of gear teeth}}{180}$$

$$\text{Number of gear teeth} = \frac{160 \times 180}{960} = 30 \text{ teeth}$$

1. violet – red.
2. violet – it has the maximum frequency in spectrum colours.

El-Fayoum Governorate

23 Science Supervision

1. transverse – centre of compression
2. 20 Hz – 20 KHz.
3. androecium – gynoecium.
4. opaque – transparent

1. It is the time taken by an oscillating body to make one complete oscillation
2. It is the process of fusion of the nucleus of the male cell (pollen grain) with the nucleus of the female cell (ovum) to form the zygote.
3. It is the change of light path when it travels from a transparent medium to another transparent medium of different optical density.

1. It is used to determine the pitch (frequency) of an unknown tone.
2. It analysis the white light into seven spectrum colours.
3. Producing large numbers of a plant by using a part of it.

1. straight. 2. sweet potatoes.
3. the seed. 4. frequency
5. four 6. 50°

1. Look at the main book on page (46).
2. Look at the main book on page (170).

1. P 2. N

1. Sound quality (type). 2. Mirage.
3. Wave motion. 4. Infrasonic waves.
5. The flower.
6. Syphilis.

1. a 2. c 3. d 4. b 5. d

- The absolute refractive index of diamond
$$= \frac{\text{Velocity of light through air}}{\text{Velocity of light through diamond}}$$

$$= \frac{3 \times 10^8}{1.25 \times 10^8} = \frac{3}{1.25} = 2.4$$

- At (B) the intensity is $\frac{1}{4}$
At (C) the intensity is $\frac{1}{9}$
At (D) the intensity is $\frac{1}{16}$

1. Because the flowers contain only male or female reproductive organ.
2. Because angle of incidence = angle of reflection = zero.
3. Because it is repeated regularly in equal periods of time.

1 Sound frequency (F) =

$$\frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$600 = \frac{300 \times \text{Number of gear teeth}}{60}$$

$$\text{Number of gear teeth} = \frac{600 \times 60}{300} = 120 \text{ teeth.}$$

1. Part (X) : - Protection of reproductive organs of the flower.
- Attraction of insects to the flower, which help in the reproduction process.

Part (Y) : Protection of the inner parts of the flower specially before blooming.

2. a. Mixed (cross) pollination.
b. Bisexual (hermaphrodite) flower.

El-Minia Governorate

24 Minia Kawla Lang. School

1. c 2. d 3. a 4. b

- Look at the main book on page (91).

1. It is used to determine the pitch (frequency) of an unknown tone.
2. It analysis the white light into seven spectrum colours.

Answers of Final Examinations

1. Optical density of the medium
2. Tissue culture. 3. Oscillatory motion
4. Sound pitch

1. To adhere on the insect's body.
2. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
3. Due to the difference in harmonic tones that associate the fundamental tone of each of them
4. Because the frequency of red light photon is less than that of orange light photon

1. greater 2. potatoes
3. longitudinal 4. straight

1. It will reflect on itself
2. Its velocity increases to the maximum value

1. Wavelength = 15 cm = 0.15 m.
2. Frequency = $\frac{1}{4} = 0.25 \text{ Hz}$
3. Amplitude = 3 cm = 0.03 m
4. Periodic time = $\frac{1}{0.25} = 4 \text{ sec}$

1. The velocity of the visible light wave in space is $\left(\frac{6 \times 10^8}{2} \right)$ which equals $3 \times 10^8 \text{ m/sec}$
2. The angle between the refracted light ray and the normal at the point of incidence on the interface equals 60°
3. The periodic time of this spring is $\left(\frac{60}{60} \right)$ which equals 1 sec

1. Stamen – Parts of the carpel
2. Rotary bee motion – Oscillatory motions
3. Harshness of voice – Secondary female sex characters

1. Petal. 2. Anther
3. Ovary. 4. Sepal

Qena Governorate

25 Qena Official Lang. School

1. mechanical – vacuum
2. a group of sepals – the corolla
3. frequency – wavelength

4. mechanical waves – electromagnetic waves.
5. refraction – optical density.

① The absolute refractive index of diamond

$$= \frac{\text{Velocity of light through air}}{\text{Velocity of light through diamond}}$$

$$2.4 = \frac{3 \times 10^8}{\text{Velocity of light through diamond}}$$

$$= \frac{3 \times 10^8}{2.4} = 1.25 \times 10^8 \text{ m/sec.}$$

- ② 1. - **Regular reflection** : The incident light rays are reflected in one direction
- **Irregular reflection** : The incident light rays are reflected in different directions.
2. - **Longitudinal waves** : The particles of the medium vibrate along the direction of wave propagation.
- **Transverse waves** : The particles of the medium vibrate perpendicular to the direction of wave propagation.
3. - **Zygote** : It contains the complete number of genetic material.
- **Pollen grain** : It contains half the number of genetic material.

- ③ ① 1. 4 2. a periodic motion.
3. ultrasonic 4. increasing
5. wood.

- ② 1. Part (X) : - Protection of reproductive organs of the flower.
- Attraction of insects to the flower, which help in the reproduction process.

Part (Y) : Protection of the inner parts of the flower specially before blooming.

2. a. Mixed (cross) pollination.
b. - Pollination by air (wind).
- Pollination by insects.
c. Bisexual (hermaphrodite) flower.
d. - Tulip.
- Petunia.

- ③ ① 1. Sound intensity.
2. Angle of reflection of light ray.
3. The wave. 4. Watt/m².

- ① 1. Due to the difference in the harmonic tones that associate the fundamental tone produced from the source of sound.
2. Because the velocity of light waves of lightning (electromagnetic waves) is much greater than that of sound waves of thunder (mechanical waves).
3. Due to the production of estrogen hormone.

- ② 1. The wave frequency decreases to its quarter value.
2. Self pollination occurs.

③ Sound frequency (F)

$$= \frac{\text{Number of cycles (d)} \times \text{Number of gear teeth (n)}}{\text{Time in seconds (t)}}$$

$$= \frac{960 \times 30}{120} = 240 \text{ Hz.}$$

- ④ ① 1. b 2. b 3. a 4. b 5. a

- ② 1. (✓) 2. (✓) 3. (✓)
4. (x) Gynoecium
5. (✓)
6. (x) ... between 45 to 55 years.

- ③ 1. Amplitude = 2 cm = 0.02 m.
2. Periodic time = 0.4 sec.
3. Frequency = $\frac{1}{\text{Periodic time}} = \frac{1}{0.4} = 2.5 \text{ Hz}$

1

Cairo Governorate

Modern college School

Answer the following questions :

Question

1

A Complete the following statements :

1. The crest in wave is equivalent to in longitudinal wave.
2. The frequency of sonic waves ranges between and
3. The measuring unit of wave velocity is
4. The floral leaves of calyx have green color called
5. When we look at coin in a glass of water, it's position appears to be lower than the position.
6. The sound intensity is inversely proportion with while sound pitch is directly proportion with

B Give one different between :

1. Mechanical waves and electromagnetic waves.
2. The stamen and carpel.

Question

2

A Write the scientific term for each of the following :

1. Distance covered by wave in one second.
2. The ability of transparent medium to refract the light.
3. Changing the path of light when travel from a transparent medium to another of different in optical density.
4. The angle of incidence = the angle of reflection.
5. Short stem where leaves developed and modified into reproductive organs.
6. Sound wave used for sterilization of food.

B Give reasons for :

1. The oscillatory motion is considered as a periodic motion.
2. The absolute refractive index of any transparent medium is always greater than one.
3. The flower of tulip and petunia are typical bisexual flower.

C Savart's wheel rotates with a rate of 360 per minute. If the number of teeth of gear is 50 teeth calculate the frequency of sound ?

Question

3

A Correct the underlined word :

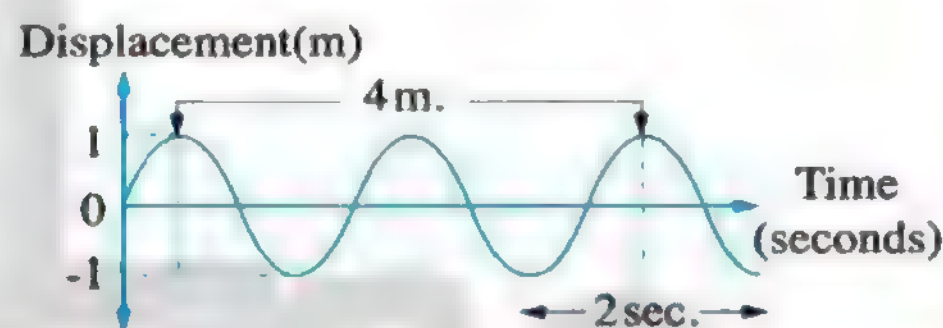
1. Periodic time is number of completed oscillation in one second.
2. The distance between two successive crest or trough is wave length of longitudinal wave.
3. The pollen grains of insect pollinated flower are smooth.
4. Sound travelling in air has more intensity than that in carbon dioxide.
5. The head of sperm contains mitochondria.
6. Bract is a group of flowers arranged on same axle.

B What is meant by ... ?

1. Amplitude.
2. Fertilization.
3. Wave motion.

C From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



Question

4

A Choose the correct answer :

1. The sound of frequency 600 Hz is the sounds of frequency 200 Hz.
a. stronger b. sharper c. weaker d. harsher
2. The complete oscillation includes successive displacement.
a. one b. two c. three d. four
3. The measuring unit of noise intensity is
a. decibel. b. watt/m². c. Hertz. d. meter/sec.
4. The angle between the incident light ray and the reflected light ray is 60°, so the angle of reflection
a. 20° b. 30° c. 80° d. 90°
5. All the following are part of female reproductive system except
a. vas deferens. b. uterus. c. ovary. d. fallopian tube.
6. In reflection, the reflected rays are reflected in many direction.
a. uniform b. irregular c. regular d. total internal

B Mention the function or (uses) of each of the following :

1. Estrogen hormone.
2. Physiotherapy tub (Jacuzzi).

C What happen when ... ?

1. A light ray falls perpendicular to reflecting surface.
2. You put a vibrating tuning fork on a resonance box.

Additional questions

A Complete the following statements :

1. The glass prism is used to analyse the light into colours.
2. and are examples of genital diseases which don't arise from sexual contact.

B Give reasons for :

The energy of red light photon is less than that of orange light photon.

2

Cairo Governorate

Manaret El-Eman Language School

Answer the following questions :

Question

1

A Put (✓) or (x) :

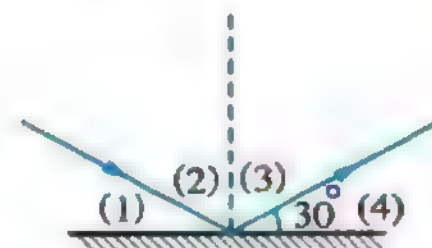
1. The progesterone hormone is responsible for appearance of secondary sexual characteristics in male. ()
2. The sound quality is the property by which the ear can distinguish between strong and weak sound . ()
3. palm trees are pollinated by the help of man. ()
4. The sound intensity decrease when the source of sound touches an empty box. ()
5. In longitudinal waves the point of highest density and pressure is called rarefaction. ()
6. The ability of the transparent medium to refract light is called the optical density of the medium. ()

B Give reasons for each of the following :

1. Flowers pollinated by insects produce coarse pollen grains.
2. The use of ultrasonic waves in milk sterilization.
3. Radio waves are transverse waves but sound waves are longitudinal waves.
4. The piano sound differs from that of a violin even they have the same pitch and intensity.
5. Petals of corolla are colorful and scented.
6. The presence of the testes in human male outside the body in the scrotal sac.

C Look at the opposite figure, then answer :

The angle of incidence is the angle number
and it equals



PART

3

Question

2

A Choose the correct answer :

- The male reproductive organ in the flower is
a. gynoecium. b. androecium. c. corolla. d. prostate.
- A pencil partially immersed in water appears as being broken due to the of light rays.
a. refraction b. reflection analysis
c. reflection d. no correct answer
- All of the following factors affecting sound intensity except
a. amplitude. b. frequency. c. wind direction. d. medium density.
- The angle of incidence is the angle of reflection.
a. larger than b. less than c. equal to d. no correct answer
- All the following are examples of the oscillatory motion except
a. swing. b. spring. c. rotary bee. d. tuning fork.
- The human ear can hear sound of frequency
a. 50 KHz. b. 30 KHz. c. 300 Hz. d. 10 Hz.

B What happens to each of the following ... ?

- Ovary after fertilization.
- A light ray falls perpendicular on a reflecting surface.
- The oscillating body passes its rest position during its movement. (concerning velocity)
- The wavelength increases to double value when the wave velocity is constant. (concerning the frequency)

C Mention one function for each of the following :

- Ultrasonic waves.
- Gynoecium.
- The testes.
- Savart's wheel.

Question

3

A Write the scientific term for each of the following :

- The highest point of the particles of the medium in the transverse waves.
- The fusion of the male gamete with the female gamete.
- The angle between the incident light ray and the normal at the point of incidence on the interface.
- The reciprocal of the frequency.
- Short stem where the leaves are developed and modified into reproductive organs.
- A phenomenon that appears in the desert as a result of refraction and reflection of light.
- The process of multiplying a small part of a plant to get many identical plants.
- Two glands, each of them is in a size of a peeled almond and they lie inside the female body in the lower part of the abdominal cavity.

B Compare between each of the following :

1. The sperm and the ovum (regarding to the size and the motion).
2. Mechanical and electromagnetic waves. (definition and examples)

C If the frequency of a sound wave is 200 Hz and the wavelength of this wave is 1.5 meter : Calculate the velocity of sound waves propagation in air.**Question****4****A Complete the following statements :**

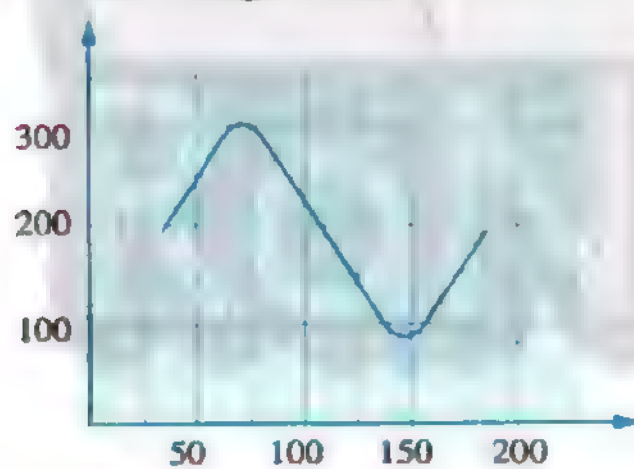
1. From the artificial vegetative reproduction in plant are and
2. Reflection of light is classified into two types which are reflection and reflection.
3. Calyx of a flower consists of green leaves called
4. The measuring unit of noise intensity is
5. Each ovary produces one ovum every days in exchange with the other ovary.
6. Sound is produced due to of bodies.

B What is meant by ... ?

1. Sound pitch.
2. Pollination.
3. Amplitude.
4. The absolute refractive index.

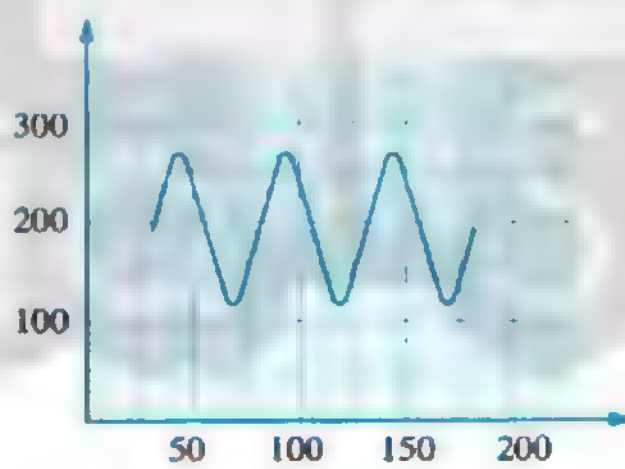
C From the following figure, find :

1. The rough tone.

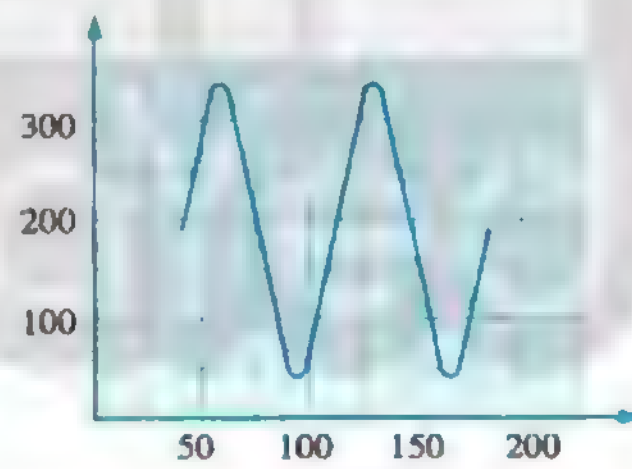


(a)

2. The sharper tone.



(b)



(c)

Additional questions**A Choose the correct answer :**

1. The incubation period of puerperal sepsis disease ranges from
 a. 1 to 4 days. b. 2 to 6 days. c. 1 to 4 weeks d. 2 to 3 weeks.
2. White light consists of spectrum colours.
 a. nine b. six c. seven d. eight.

B Give reasons for :

A recently laboured mother should avoid air currents after delivery.

Answer the following questions :

Question

1

A Complete the following statements :

1. The hormone in male and hormone in female are responsible for the appearance of secondary sex characters.
2. The light reflection is classified into two types which are and
3. The mechanical waves are classified into and

B Define :

1. Sound quality.
2. Pollination.

C Mention the mathematical relations between :

1. Frequency and periodic time.
2. Wave velocity and wavelength.

Question

2

A Compare between : (one point)

1. Sonic waves and infrasonic waves.
2. Vegetative reproduction and flowering reproduction.
3. Sound pitch and sound intensity.

B Mention the measuring unit of :

1. Amplitude.
2. Sound velocity.
3. Noise intensity.
4. Periodic time.

C Calculate the angle of reflection if the angle between the incident light ray and the reflected light ray is 60°

Question

3

A What is meant by ... ?

1. The wavelength of a longitudinal wave is 30 cm.
2. The number of complete oscillations of a body in 10 sec. is 500 oscillations.
3. The amplitude of an oscillating body is 6 meter.

B Mention the importance of :

1. Ultrasonic waves.
2. Corolla in flower.

C Calculate the number of gear's teeth of savart's wheel, given that the frequency of the sound produced is 300 Hz and wheel rotates with a rate 30 cycles per second.

Question

4

A Give reason for :

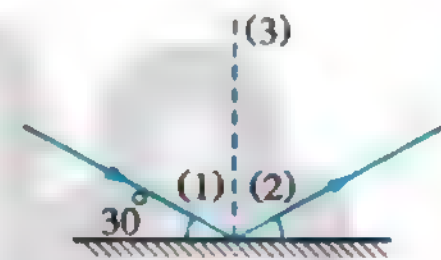
1. The absolute refractive index of a medium is greater than one.
2. The flower of bean plant is bisexual.
3. Light can travel through space.

B Put (✓) or (x) :

1. The light ray refracts towards the normal when it travels from air to glass. ()
2. The particles of the medium vibrate along the direction of the wave propagation in longitudinal wave. ()
3. The sound intensity decreases when it touches a resonance box. ()
4. The swing is an example of periodic motion. ()

C Look at the opposite figure, then answer :

1. Write the Labeled (1), (2) and (3).
2. Calculate the measurement of angle (2).



Additional questions

A What is meant by ?

Visible light.

B What happens when ?

1. Incidence of a white light ray on one face of triangular glass prism.
2. The syphilis infected person is not treated.

4

Cairo Governorate

B. Karnak Language School

Answer the following questions :

Question

1

A Complete the following :

1. Sound is from waves that can't travel through
2. In a flower, the calyx consists of, but group of petals form
3. The high pitched sound waves have high and small

4. The ear can't hear sounds with frequencies less than Hz, but can hear sounds of frequencies up to Hz.
5. Waves are classified according to their ability to propagate and transfer energy into and
6. There are two types of periodic motion which are motion and motion.
7. Light is the change of light path when it travels from a transparent medium to another one of different

B Calculate the speed of light in diamond given that the absolute refractive index of it = 2.4 and speed of light in air = 3×10^8 m/s.

C Compare between :

1. Regular reflection - irregular reflection. (direction of reflected rays)
2. Two testes – two ovaries. (their function)
3. Longitudinal waves – transverse waves. (direction of vibrating particles)
4. Zygote – pollen grains. (the number of genetic materials)

Question

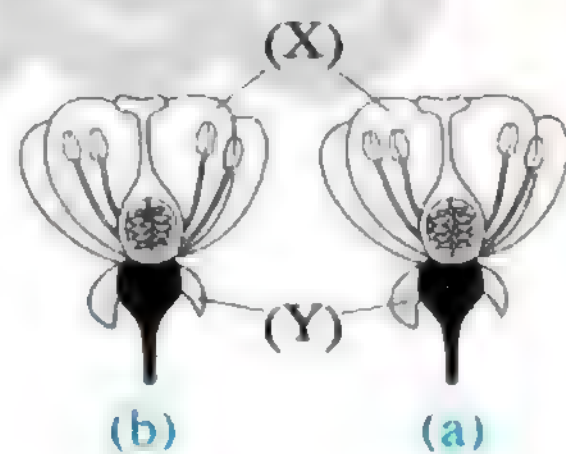
2

A Correct the underlined words :

1. Complete oscillation consists of $\frac{1}{4}$ amplitude.
2. The motion of rotatory bee is considered as an oscillatory motion.
3. The infrasonic waves are used in breaking down kidney stones.
4. Sound pitch is increased by decreasing density of medium.
5. Speed of sound in water is slower than in air.

B Look at the opposite figure, then answer the following :

1. What is the function of the parts (X) and (Y) ?
2. Pollen grains from the flower (a) are transferred to the ova in flower (b) :
 - What is the type of pollination that happened ?
 - Write two methods for this kind of pollination ?
 - What is the sex of the flower (b) ?
 - Write the name of two plants having the same sex of flower.



C Calculate the wavelength for each of the following :

1. A transverse wave, the distance between its second and seventh crest = 21 meters.
2. A longitudinal wave, the distance between the centres of its successive compression and rarefaction = 14 meters.

Question 3

A Write the scientific term :

1. A property by which the ear can distinguish between harsh and sharp voices.
2. A tube in female reproductive organ, which receive ovum and connect it to the uterus.
3. The angle between the reflected ray and the normal at the incident point on the reflecting surface.
4. A disturbance causes the vibration of medium particles.
5. The measuring unit of the sound intensity.

B Give reason for :

1. We can distinguish between different sounds even they have the same pitch and intensity.
2. We see lightening before hearing thunder.
3. Sound of man is harsh, while sound of woman is sharp.

C What happens when ... ?

1. Increasing the wavelength four times for the same velocity. (concerning wave frequency)
2. Falling of pollen grain on a stigma of the same flower. (type of pollination and flower)

D Calculate : The frequency of a musical tone similar to the tone produced from savart's wheel rotating with a velocity of 960 cycle in two minutes, knowing that the number of gear teeth = 30

Question 4

A Choose the correct answer :

1. The ratio between the periodic time of a tuning fork vibrate with 100 Hz, and the periodic time of another tuning fork vibrate with 200 Hz equals
a. 1 : 1 b. 2 : 1 c. 1 : 2 d. zero
2. The zygote contains of the genetic material of the female somatic cell.
a. half b. double c. quarter d. three times
3. The light ray refract the normal when it travels from air to glass.
a. near to b. away from c. perpendicular to d. along
4. All the following are from the factors affecting sound intensity except :
a. amplitude. b. frequency.
c. density of medium. d. wind direction.
5. Sound waves have frequency 400 Hz and its wavelength is 85 cm so, its velocity =
a. 340 m/s b. 34000 m/s c. 3.4 m/s d. 0.034 m/s
6. A pencil seems broken when it is placed in a glass cup of water due to of light.
a. critical angle b. mirage c. refraction d. reflection

PART

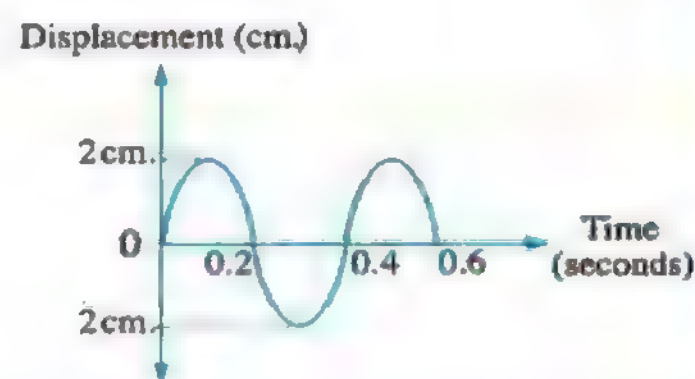
3

B Put (✓) or (x) and correct the wrong one :

1. The fish is seen higher than its real position in the fish tank. ()
2. The amplitude is the covered distance in a complete oscillation. ()
3. The velocity of the oscillating body is maximum when passing through original position. ()
4. Androecium is the female reproductive organ in plant. ()

C From the figure below calculate :

1. Amplitude.
2. Periodic time.
3. Frequency.
4. What is the type of this wave ?



Additional questions

A Complete the following statements :

1. The light velocity is the distance
2. The infection with syphilis and is caused by

B Write the scientific term of each of the following :

1. A physical quantity equals planck's constant is multiplied by photon frequency.
2. A genital disease caused by spiral bacteria.

5

Cairo Governorate

Manarat Alfarouk Islamic Lang. School

Answer the following questions :

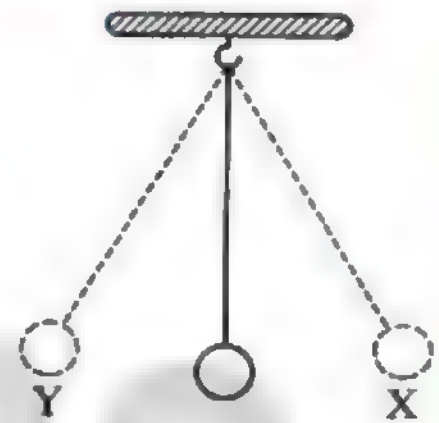
Question

1

A Choose the correct answer :

1. An organ which is responsible for formation of ova in the flower is
 a. another. b. ovary. c. corolla. d. stamen.
2. The distance between the 2nd and 5th crest in the transverse wave is 60 cm. so the wavelength of this wave is
 a. 0.2 m. b. 0.2 cm. c. 20 cm. d. a, c are right
3. Sound wave travels in air with velocity of 340 m/s. and its frequency is 20 Hz. the wavelength of it is
 a. 14 cm. b. 170 cm. c. 170 m. d. 1700 cm.

4. The artificial vegetative reproduction is done in plants by
- a. cutting. b. grafting. c. tissue culture. d. all the previous.
5. All the following are factors affecting sound intensity except
- a. density of the medium. b. wind direction.
c. wavelength. d. amplitude.
6. Noise intensity is measured in
- a. Hertz. b. watt/m² c. decibel. d. m/sec.
7. The absolute refractive index of any material is always
- a. More the one. b. equals one. c. less than one. d. negative.
8. In the opposite figure :
when the ball of the pendulum moves from (X) to (Y) in a duration of 0.02 seconds, the frequency equals Hertz.
- a. 0.04 b. 0.02
c. 25 d. 50



B What is meant by ... ?

1. The amplitude of transverse wave is 5 cm.
2. Absolute refractive index of glass is 1.5.
3. Sound intensity at a point is 100 watt/m².

C Calculate the number of teeth in savart's wheel gear rotated by 360 cycles in one minute and half, if the frequency of sound equals 500 Hz.

Question 2

A Write the scientific term of the following :

1. An oval shaped gland produces male gametes.
2. The ability of the medium to refract light rays.
3. The number of complete oscillations in one second.
4. Sound waves their frequency is more than 20000 Hz.
5. Short stem where the leaves developed modified into reproductive organs.
6. Incident ray, reflected ray and normal line, all locate in one plane which is perpendicular on reflecting surface.

B Compare between :

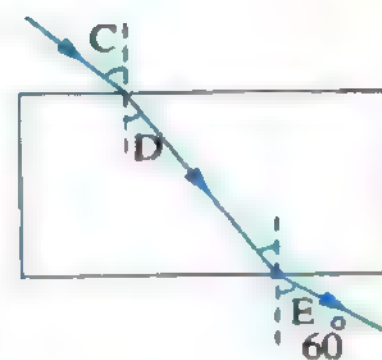
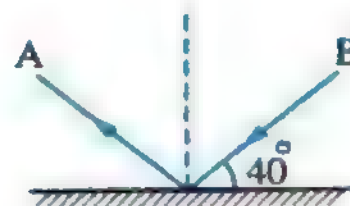
1. Androcium and Gynocium.
2. Transverse wave and Longitudinal wave.
3. Sound pitch and Sound intensity.

C From the following figures :

Find : 1. Angle between A, B rays.

2. Mention the name of :

Angle (D) / Angle (E) then detect the measure of angle (C)



Question

3

A Give a reason for :

1. Presence of scrotal sac including testes outside the body.
2. We see lightning before hearing thunder.
3. Pollen grains have half of hereditary substance in their nuclei.
4. Sounds may be different even they are equaled in both pitch and intensity.

B Extract the unsuitable word, then write the relation between the rest of the words :

1. Sepals – Tubers – Petals – Carpels.
2. Wave velocity – Wave frequency – Wave amplitude – Wavelength.
3. Sperm – Ovum – Leaf – Pollen grain.

C Mention one use of :

1. Ultrasonic waves.

2. Resonance box.

Question

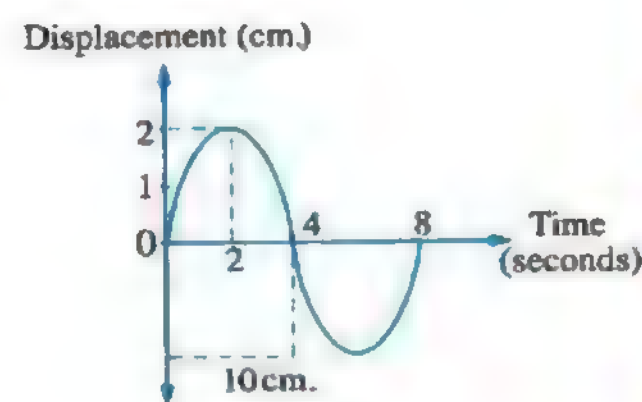
4

A Correct the underlined words :

1. The angle of incidence equals half the angle of reflection.
2. Fusion between sperm and ovum is called pollination.
3. Changing light ray path on facing transparent object is considered light reflection.
4. Reproduction by tubers can be used in apples and pears.
5. Coloured flowers are used in pollination by air.
6. As the density of medium decreases, amplitude increases.

B From the following figure find :

1. Amplitude.
2. The wave velocity.



C What will happen when ... ?

1. Incident light ray falls perpendicular on the reflecting surface.
2. Pollen grain falls on stigma of flower.
3. The distance between sound source and listener is decreases to half.

Additional questions

A What is meant by ?

The inverse square law of sound.

B What happens when ?

1. A compact disc (CD) with shiny side is put to face sunlight.

2. The wound of recently laboured mother is infected by spherical bacteria.

6

Giza Governorate

6 of October Educational Directorate

Answer the following questions :

Question

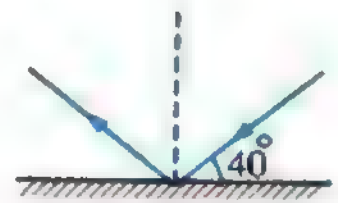
1

A Mention the scientific term :

1. Motion made a body around its point of rest, where the motion is repeated through equal intervals of time.
2. The number of complete oscillations produced by the oscillating body in one second.
3. The reflection in which the light rays recoil in one direction when incident on a glistening surface.
4. Changing the path of light when travel from a transparent medium to another transparent medium of different optical density.
5. The incident light ray, reflected light ray and the normal all locate in one plane perpendicular to the reflecting surface.
6. A new method to produce large numbers of plants from a small part of it.

B In this figure find :

1. Angle of incidence.
2. Angle between incident ray and reflected ray.



C Mention one function for :

1. Flower calyx.
2. Flower anthers.

Question

2

A Complete the following :

1. Waves are classified according to the ability to propagate and transfer energy into and waves.

2. Angle of refraction is the angle between the light ray and the normal at point of incidence on separating surface.
3. The cell resulting from fusion of pollen grain and ovum nucleus is called
4. Human testes produces hormone but female ovary produces hormone and progesterone hormone.
5. Asexual reproduction in plants are classified into and vegetative reproduction.

B Savart's wheel rotates with a rate of 300 cycles per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of teeth of the gear.

C What is meant by ... ?

1. Absolute refractive index of water is 1.33
2. Periodic time.

Question

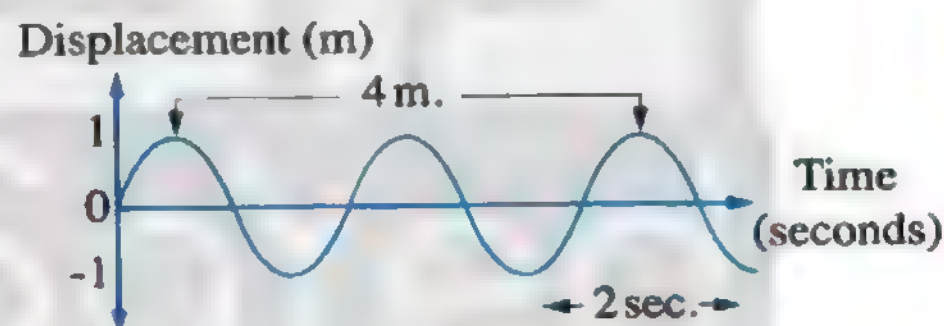
3

A Correct the underlined word :

1. Unit of sound intensity is Hertz.
2. Harmonic tones companying the fundamental tone lower in pitch.
3. The wall of the ovule after fertilization forms the wall of the fruit.
4. Reproduction by tuber happens in orange and naring.

B From the opposite figure, find :

1. Amplitude.
2. Frequency.
3. Wavelength.



C Give reason for :

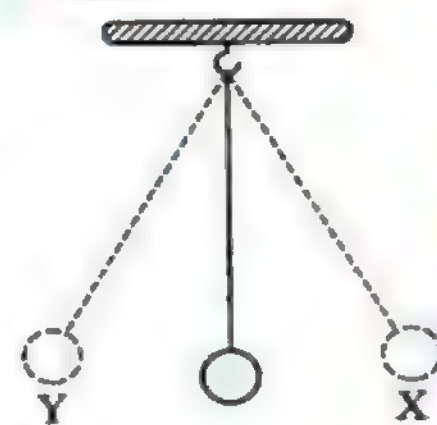
1. Palm plant is unisexual.
2. The light ray that is incident perpendicular on a glistening surface reflects on itself.

Question

4

A Choose the correct answer :

1. The result of multiplying frequency of an oscillation body its periodic time equals
 a. variable value. b. negative value. c. constant value. d. one.
2. In the opposite figure :
 when pendulum moves form (X) to (Y) in duration of 0.02 seconds,
 the periodic time equals seconds.
 a. 0.01 b. 0.04
 c. 50 d. 100



Final Examinations

3. Complete oscillation includes displacements.
a. 1 b. 2 c. 4 d. 6
4. All of the following are factors affecting sound intensity except
a. Amplitude of vibration. b. frequency.
c. medium density. d. wind direction.
5. Sound of frequency 200 Hz is than sound of frequency 100 Hz.
a. sharper b. stronger c. harsher d. weaker
6. The plant ovary produces
a. Polen grains. b. ovum. c. sperms. d. ovule.
7. is a short stem where leaves developed and modified into reproductive organs.
a. Tuber b. Flower c. Stock d. Scion
8. The colorful and scented flower leaves are called
a. sepals. b. stamens. c. carpels. d. petals.

B Cross the odd word out. Then, state the relation among the remaining words :

1. Sound wave – Light wave – Radio wave – Infrared wave.
2. Pendulum motion – Spring motion – Rotary bee motion – Stretched string motion.
3. Cuttings – Pollination – Tissue culture – Grafting.

Additional questions

A Complete the following statements :

1. Light travels through the media in lines.
2. The incubation period of puerperal sepsis disease is , while that of syphilis disease is

B Writ the scientific term :

A disease, whose symptoms appear as a rashes on the bach and hands of the patient.

7

Giza Governorate

Abo El-Nomrous Educational Directorate

Answer the following questions :

Question

1

A Complete the following :

1. Sound waves are longitudinal waves because particles of the medium vibrate the direction of wave propagation.
2. The light reflection is classified in two types which are and

PART

3

3. Testes produce and secrete hormone.
4. From properties of light is that light travels in lines.
5. Each ovary produce one ovum each days, in exchange with the other ovary.
6. The frequency of the oscillation body is measured by unit called
7. The measuring unit of sound intensity is while that of noise intensity is

B What happens when ... ?

1. A light ray falls perpendicular on the reflecting surface.
2. When a pollen grain falls on stigma of a flower.

Question**2****A Choose the correct answer for the following statements :**

1. A pencil partially immersed in water appears broken due to the of light energy rays.
a. refraction b. reflection c. analysis
2. The angle of incidence of light ray is 30° , so the angle of reflection is
a. 30° b. 60° c. 90°
3. The human ear can not hear sound of frequency
a. 50 Hz. b. 300 Hz. c. 10 Hz.
4. The male reproductive organ in flower is
a. gynoecium. b. androecium. c. corolla.
5. is (are) mechanical waves.
a. Water waves only b. Sound wave only c. Both a, b
6. The ovum contains of the genetic material of the plant species.
a. half b. all c. quarter
7. The artificial vegetative reproduction is done by
a. cutting. b. grafting. c. all the previous.
8. Velocity of sound in air equals m/s.
a. 340 b. 1500 c. 3×10^8

B Mention the importance of :

1. Jacuzzi.
2. Ovary in female human.

C Compare between :

Oscillatory and wave motion (definition only).

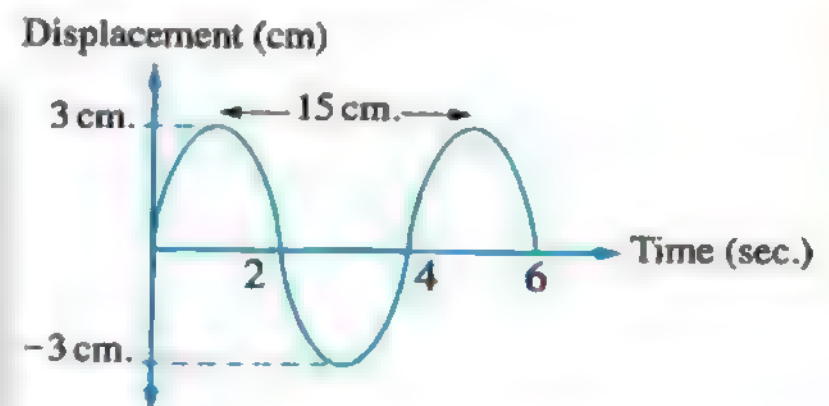
Question**3****A Write the scientific term for each of the following :**

1. Short stem where the leaves developed into reproductive organs.

- The reproduction by some plants part as roots, stem, leaves.
- The ability of medium to refract light rays.
- A phenomenon that appears in the desert as a result of refraction and reflection of light.
- A new method of producing large numbers of plants from small part of it.
- The motion which regularly repeated in equal periods of time.
- Fusion of male and female gametes to form zygote.
- A property by which ear can distinguish between rough and sharp voices

B Calculate :

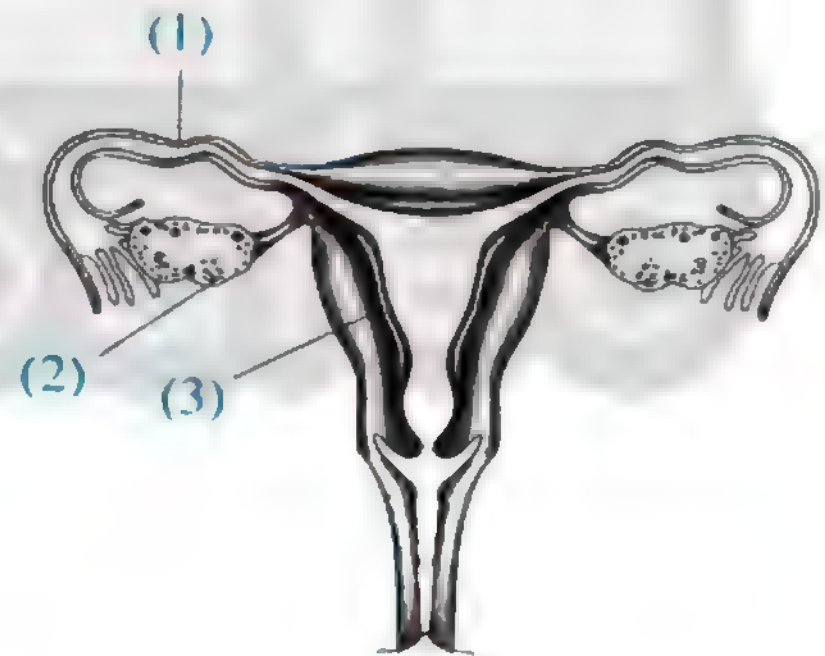
- Amplitude =
- Wavelength =
- Periodic time =
- Wave velocity =

**C Give reason for :**

- The petals of corolla are coloured and scented.
- Ultrasonic waves are used in sterilization of food.

Question 4**A Look at the opposite diagram then, answer :**

- The name of this diagram ?
- The structure in which secrete progesterone is number
- The structure in which fertilization occur is number
- The structure in which fetus grow is number

**B Put (✓) or (✗) and correct the wrong ones :**

- The typical flower contains three whorls. ()
- Light waves are electromagnetic transverse wave. ()
- Vas deference stores the sperms. ()
- Sound intensity increase as amplitude increase. ()

C If you know that water waves propagate with velocity 8 m/sec. and they make 20 waves in 5 sec., Calculate the distance between the first and third crest of these wave.

Additional questions

A Choose the correct answer :

1. colour has the lowest deviation.

a. Violet

b. Green

c. Red

d. Yellow

2. An ulcer at the tip of the penis in male is due to infection.

a. syphilis

b. gonorrhea

c. puerperal sepsis

d. german measles

B Give reasons for :

Preventing visits of persons who suffer from respiratory diseases to the mother after delivery.

8

Giza Governorate

El-Sheikh Zayed Educational Directorate

Answer the following questions :

Question

1

A Complete the following statements :

1. The angle of incidence the angle of reflection.

2. In the waves, the particles of the medium vibrate perpendicular to the direction of wave propagation.

3. The are small cells that formed in the anther of the flower.

4. Sound is the property by which the ear can distinguish between sharp or rough sounds.

5. The male sex hormone is called

6. The sound intensity at a point is proportional to the square of the distance between this and the source of sound.

B Calculate the frequency of a simple pendulum which makes 600 complete oscillations in 30 seconds.

Question

2

A Put (✓) or (x) :

1. Sound can be heard from all directions that surround the sound source. ()

2. The flower that contains male and female reproductive organs is called female flowers. ()

3. Sound intensity increases when the wind and sound waves are in the same direction. ()

4. The absolute refractive index for any transparent medium is less than 1 ()

Final Examinations

5. The light is a mechanical wave. ()
6. The seminal vesicles, prostate gland and cowper's glands are associated to the male reproductive system. ()

B What is meant by ... ?

1. Amplitude. 2. Fertilization.

C Correct the underlined words :

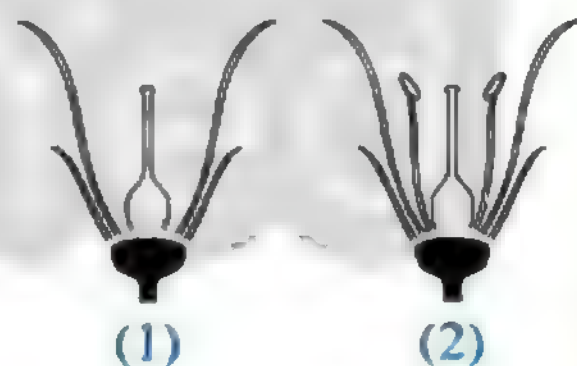
1. Growing leads to continuity of the living organism .
2. Sonic wave are used in sonar device and breaking down stones of kidney.
3. When the sound source touches a resonance box, the sound intensity decreases.
4. The swing and tuning fork are example of wave motion.

Question**3****A Write the scientific term for each of the following :**

1. The returning back of light waves to the same medium of incidence when they meet a reflecting surface.
2. The female reproductive organ of the flower.
3. The number of complete oscillations produced by the oscillating body in one second.
4. The tones that accompany the fundamental tone, but they are higher in pitch and lower in intensity.
5. The transferring of pollen grains from the anther of the flower to the stigma.
6. The distance between two successive compressions or rarefactions in a longitudinal wave.

B Mention the sex in each flower from the following :

- Flower (1)
- Flower (2)

**Question****4****A Give reasons for each of the following :**

1. Hearing thunder after seeing lightning in spite of they both happen at the same time.
2. The pencil in a cup of water seems broken.
3. The petals of corolla are coloured and scented.

B Choose the correct answer :

1. From artificial vegetative reproduction
- a. cutting. b. grafting. c. tissue culture. d. (a) , (b) and (c).
2. Calyx consists of a group of green leaves each of them is called
- a. sepal. b. carpel. c. petal. d. micropyle.

PART

3

3. The speed of sound wave is measured in a unit known as
- a. Hz. b. Watt/m² c. m/sec. d. Decibel.
4. If the angle between the incident light ray and the reflecting surface is 30°, so the angle of reflection equals
- a. 30° b. 60° c. 90° d. 180°
5. The result of multiplying frequency of an oscillating body by its periodic time equals
- a. one. b. negative value. c. constant value. d. variable value.
6. A natural phenomenon takes place on the desert roads at noon due to reflection and refraction of the light
- a. lightning. b. thunder. c. mirage. d. rainbow.
7. Calculate the frequency of a musical tone similar to the frequency of a produced tone using Savart's wheel rotated with a velocity of 100 cycles in 50 seconds. given that the number of teeth of the gear is 30 teeth.

Additional questions

A Complete the following statements :

1. As the distance between the light source and the surface increases twice, the intensity of light of the surface to its
2. Syphilis disease can be transmitted from pregnant woman to her fetus through the or during the

B What is meant by ?

Analysis of light.

9

Giza Governorate

Talaee Islamic Language School

Answer the following questions :

Question

1

A Complete the following sentences :

1. The crest in the wave is equivalent to the in the longitudinal wave.
2. Each carpel consists of a swollen part called ovary which connects with tube called and ending in
3. The frequency of sonic waves ranges between Hz and Hz
4. The two testes function is to produce and secrete hormone.

B What is meant by ... ?

1. Wavelength of a sound wave is 30 cm.
2. The number of complete oscillations made by an oscillating body in 10 sec. is 500 complete oscillations.
3. Absolute refractive index of water is 1.33

Question**2****A Write the scientific term for each of the following :**

1. The maximum displacement of medium particles away from their original position.
2. Short stem where the leaves developed and modified into reproductive organs.
3. Changing the path of light when travels from a transport medium to another transparent medium of different optical density.
4. Process of fusion of the nucleus of pollen grain with the nucleus of ovum to form the zygote.

B What happens when ... ?

1. A light ray falls on a rough surface.
2. A light ray travels from a transparent medium of higher optical density to another of lower optical.

C Mention one use or function :

1. The calyx.
2. Ultrasonic waves in industrial field.

Question**3****A Give reason for :**

1. Sound intensity in the presence of carbon dioxide as a medium is higher than that in air.
2. Water waves are mechanical transverse waves.
3. Pollen grains of wind pollinated flowers are produced in a huge number.
4. The oscillatory motion is considered as a periodic motion.

B Put (✓) or (✗) and correct the wrong ones :

1. If the angle between the incident light ray and the reflecting surface is 35° , so the angle of reflection is 35° ()
2. From the ways of artificial vegetative reproduction are cutting, grafting and tubers. ()
3. The sound velocity through solids is less than that through liquids. ()

Question**4****A Choose the correct answer :**

1. The unit of measuring sound intensity is

a. m/sec.

b. watt/m²

c. decibel.

d. no correct answer.

PART

3

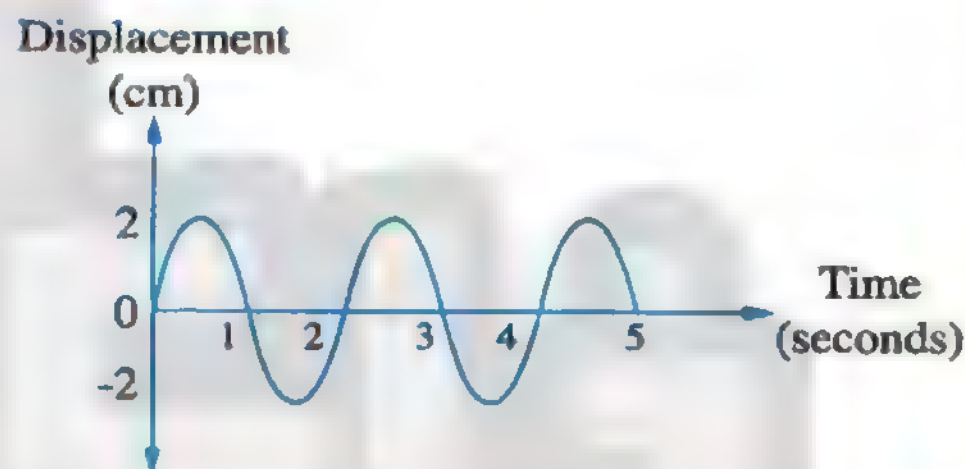
2. All of the following are electromagnetic waves except waves.
 a. light b. sound c. x-rays d. radio
3. If the distance between the centre of the third compression and that of the sixth compression on the wave propagation is 15 cm., the wavelength of this waves is
 a. 5 cm. b. 30 cm. c. 7.5 cm. d. 3.75 cm.
4. After fertilization the ovary develops and becomes the
 a. flower. b. fruit. c. seed. d. embryo.

B Compare between each of the following :

- Self pollination and mixed pollination.
- Sound of man and sound of woman. (according to sound pitch and frequency)

C The opposite figure represents an oscillatory motion. Find :

- Amplitude.
- Periodic time.
- Frequency.
- Time on one amplitude.

**Additional questions****A Choose the correct answer :**

- The photon energy = Planck's constant \times
 a. photon frequency. b. photon velocity.
 c. light intensity. d. no correct answer.
- All of the following are sexual transmitted diseases except
 a. gonorrhea. b. syphilis.
 c. prostate cancer. d. AIDS.

B Rewrite the following statements after correcting the mistakes :

- Violet colour has the longest wave length.
- Light travels in transparent media in the form of zigzag lines.

10

Alexandria Governorate

Middle Educational Directorate

Answer the following questions :

Question

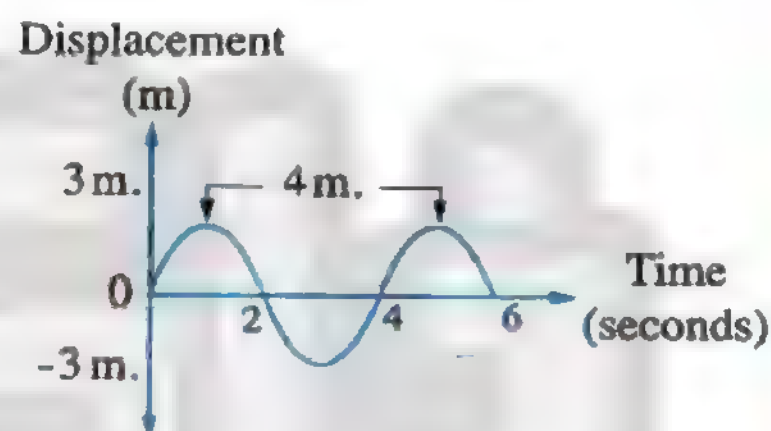
1

A Write the scientific term for the following :

1. The point of the highest density and pressure in longitudinal wave.
2. A property by which the human ear can distinguish between harsh and sharp voice.
3. The angle between the emergent light ray and the normal.
4. The transfer of pollen grains from the anther of a flower to the stigma of the same flower.
5. A group of glands their function is to secret semen.
6. A new method to produce large numbers of plants from small part of it.

B From the opposite figure, find :

1. Amplitude.
2. Periodic time.
3. Frequency.
4. Wavelength.
5. Wave velocity.



C What happens in the following cases ... ?

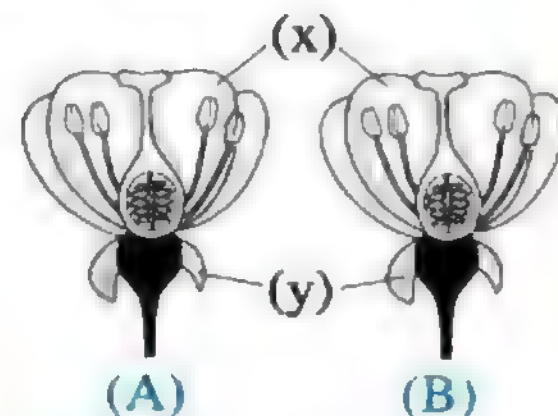
1. The vibration of the particles of a medium in perpendicular to the direction of wave propagation.
2. To incident light ray falls of rough surface.

Question

2

A The opposite figure shows two flowers of two plants from the same species :

1. What is the name of parts (x) and (y) ?
2. Mention the function of parts (x) and (y) ?
3. What is the sex of flowers (A) and (B) ?



B In the following cross out the odd word, then mention the scientific term of the rest :

1. Pedulum motion – Spring motion – Rotary bee motion – Stretched string motion.
2. Anther – Filament – Pollen grains – Style.

C Define the following :

1. Wave motion.
2. Mirage.

PART

3

Question

3

A Choose the correct answer :

- The doctors use waves with a frequency, to break down kidney's stones.
 - Less than 20 Hz
 - 20 Hz
 - more than 20 kHz
- Sound intensity in air is that in carbon dioxide.
 - less than
 - more than
 - equal to
- When light ray passes from air to glass it refracts the normal.
 - away from
 - near to
 - perpendicular to
- The absolute refractive index of any materials is always one.
 - less than
 - more than
 - equal
- The flower is a modified
 - stem.
 - root.
 - leaf.
- All the following are single seed fruit except
 - apricot.
 - peaches.
 - peas.

B Mention the use or function of the following :

- Jacuzzi.
- Fallopian tubes.

C Compare between the following :

- Mechanical waves and electromagnetic waves concerning the medium.
- The ovum and the sperm concerning the size.

Question

4

A Complete the following statements :

- The amplitude equals of a complete oscillation.
- Sound is produced from of bodies.
- The measuring unit of sound intensity is
- The natural vegetative reproduction in potatoes is done by
- The first cell produced from the fusion of the pollen grain with the ovum nucleus is called
- The hormone in males is responsible for the appearance of signs of puberty.

B Give reasons for the following :

- The piano sound differs from that of a violin if they have the same sound properties.
- The pen seems broken, when it is put in a glass of water.
- The stigma of air pollinated flowers are feathery like and sticky.

C Calculate the frequency of a musical tone produced from a savart's wheel rotating with a velocity of 960 revolution in 2 minutes, knowing that the number of gear teeth = 30

Additional questions

A Complete the following statements :

1. is the nearest colour to the prism apex, while is the nearest colour to the prism base.
2. From the complications of syphilis disease is the appearance of in different body parts like and bones.

B Write the scientific term :

1. A genital disease, which is caused by spherical - shaped bacteria.
2. A mixture of seven spectrum colours.

11

Alexandria Governorate

Taymour English School

Answer the following questions :

Question

1

A Choose the right answer :

1. After fertilization, the ovule develops into
a. ovary. b. fruit. c. seed. d. seed coat.
2. Each complete oscillation consists of amplitudes.
a. 3 b. 4 c. 2 d. 5
3. The measuring unit of noise intensity is
a. Hertz. b. Watt/m². c. Cycles/sec. d. Decibel.
4. The number of whorls in ♂ flower is
a. 2 b. 3 c. 4 d. 5
5. The light waves propagate the direction of propagation.
a. along b. right c. left d. perpendicular
6. In ♂ human; the testes are surrounded by
a. 2-sperms. b. 3-scrotal sac. c. 2-scrotal sac. d. 2-fallopian tubes.
7. is responsible for harshness of sound in male human.
a. Estrogen b. Testosterone c. Progesterone d. Seminal fluid
8. We can hear all of the following sounds except
a. 40 Hz. b. 60 KHz. c. 10 KHz. d. 60 Hz.

-
- The diagram shows two mirrors, X and Y, meeting at a corner. Mirror X is vertical and Mirror Y is horizontal. A light ray starts from the right, reflects off Mirror Y at an angle of 30° , then reflects off Mirror X at an angle of 30° , and finally travels horizontally to the left. A dashed horizontal line is drawn from the point of reflection on Mirror X.

1. Ovum and sperm
2. Sound and radio waves (concerning : drawing and the type of each of them).

2

1. Refraction of light from low optical dense medium to a higher optical dense one.
2. Passing of sound in CO_2 and in air (Concerning sound intensity, Why ?)
3. Falling of light on a leaf.
4. Increasing number of sound waves and decreasing their amplitudes. (concerning sound pitch and sound intensity respectively)
5. Looking at a pencil immersed in water vertically with angle 90°

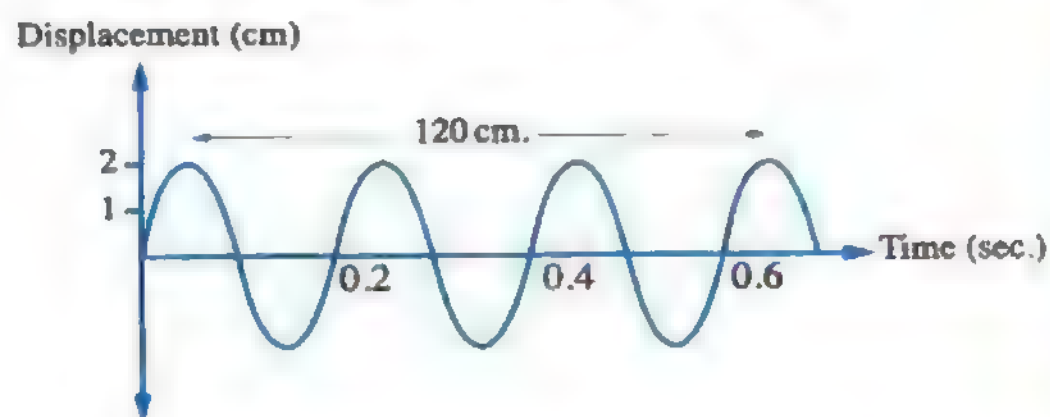
1. Absolute refractive index is always greater than one.
2. The presence of cilia in fallopian tubes of female reproductive organ.

3

- 1. Solve the following problems :**

Calculate :

- Wavelength.
- Periodic time.
- Frequency.
- Amplitude.
- Velocity of such a wave.



2. Find the frequency of unknown tone using Savart's wheel if the number of teeth of the gear used is 100 teeth and number of cycles done in 2 minutes are 300 cycles.

1. Resonance box is some musical instruments.
2. Calyx.
3. Estrogen hormone.
4. Insects in pollination.

Question 4

A Write the scientific term :

1. The waves that cannot travel in vacuum.
2. The distance covered by sound in one second.
3. They are tones accompany the basic tones but they are lower in intensity and higher in pitch.
4. The waves that are used in sterilization of food, water and milk.
5. The intensity of sound at a point varies inversely with square the distance between that point and the sound source.

B Complete the following :

1. Pollen grains which spread by wind are produced in number and they are in weight.
2. Sounds can be classified into 2 groups, musical tones of frequency and noise of frequency.
3. The stamen in flower consists of and
4. When male gamete fuses with female gamete is formed.
5. Rotary bee is an example of but not an example of

Additional questions

A Choose the correct answer :

1. Light
 - a. travels in straight lines.
 - b. consists of compressions and rarefactions.
 - c. can be analysed.
 - c. (a) and (c) are correct.
2. The microbe that causes the syphilis is
 - a. spiral virus.
 - b. spherical bacteria.
 - c. spiral bacteria.
 - d. spiral algae.

B Put (✓) or (✗), then correct what is wrong :

Syphilis disease can be transmitted by droplets.

()

12

Alexandria Governorate

East Educational Directorate

Answer the following questions :

Question 1

A Complete the following statements :

1. There are two type of periodic motion which are motion and motion.

2. The sound pitch is the property by which the ear distinguish between and voices.
3. Sexual reproduction in plants takes place in two successive processes which are then
4. Waves are classified according to the type of direction of vibration of medium particles into and
5. The fertilized ovum is called which contains pairs of chromosomes in human being.
6. When parallel light rays meet a rough surface, they reflect in directions and this is called reflection.

B What is meant by ... ?

1. The compression.

2. The frequency.

Question

2

A Write the scientific term for each of the following :

1. The maximum displacement done by the oscillating body.
2. The distance that is covered by the wave in one second.
3. The measuring unit of sound intensity.
4. The angle between the refracted light ray and the normal at the point of incidence on the separating surface.
5. An instrument used to determine the frequency of unknown sound tone.
6. A design composed of a tube, where water moves in the form of circular waves for treating sprains and cramps.
7. A group of glands, in the reproductive system, their function is to secrete seminal fluid.
8. A sac like structure that regulates and keeps the temperature of testes.

B Give a reason for each of the following :

1. The velocity of light changes from one medium to another.
2. The periodic time decrease as the number of complete oscillation increases.
3. The piano sound differs from that of a violin if they have the same sound properties.

Question

3

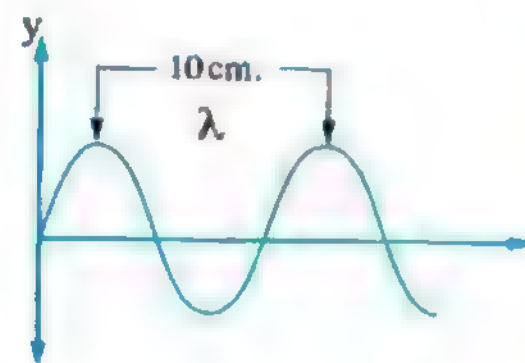
A Put (✓) or (x) and correct the wrong ones :

1. Each ovary produces only one ovum every 28 days in exchange with other ovary. ()
2. The light ray refracts towards the normal when it travels from air to glass. ()
3. In tissue culture, the tissue is separated from the lower part of the stem. ()
4. The sound intensity decreases, when the source of sound touches an empty box. ()
5. Sonic waves are used in sterilizing food substances. ()

Final Examinations

B Look at this figure, then answer the following :

1. What is the kind of this wave ?
2. What is its velocity of propagation when it produces 600 vibrations in a minute ?



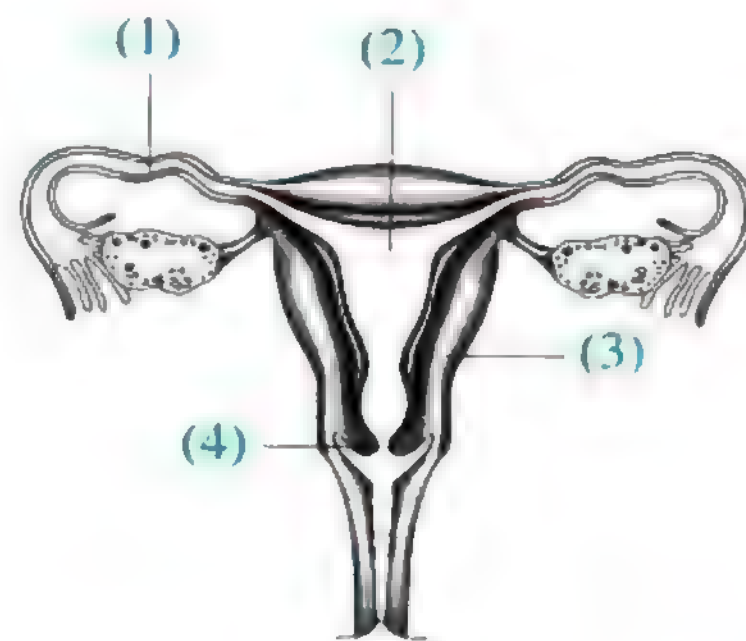
Question 4

A Choose the correct answer :

1. The ovum stores food and nutrients in the
a. nucleus. b. cytoplasm. c. cellular membrane. d. no correct answer.
2. Sperms transfer from the testes to the urinary genital duct through
a. urethra. b. epididymis. c. vas deferens. d. penis.
3. The zygote contains of the genetic material of the plant species.
a. half b. all c. quarter d. no correct answer
4. The frequency of oscillating body is measured by a unit called
a. Hertz. b. Watt/m². c. Decibel. d. m/sec.
5. Light refraction is due to the difference in through different media.
a. sound intensity b. nature of the surface
c. light velocity d. all the previous answer.
6. The absolute refractive index of any material is always
a. more than one. b. less than one. c. equal to one. d. equal zero.
7. As the velocity of the rotation of the gear in savart's wheel decreases, the frequency decrease consequently the of the sound decreases.
a. type b. pitch c. amplitude d. intensity
8. The pollen grains of flowers pollinated by wind are
a. produced in huge number. b. light in weight.
c. dry. d. (a), (b) and (c) are correct.

B In the opposite diagram :

1. Write the labeled from no (1) : (4)
2. What is the function of no (2) ?



C Mention the way of natural or artificial vegetative reproduction :

Plant	The way of nature of artificial vegetative
..... (1)	Grafting
Potatoes (2)
Sugar can (3)

Additional questions

A Complete the following statements :

1. The puerperal sepsis disease is caused by bacteria, while syphilis disease is caused by bacteria.
2. The light intensity of a surface is proportional to square of the distance between the surface and the light source.

B Give reasons for :

1. Formation of spectrum colours.
2. It is necessary to wear masks during labour process.

13

El-Qalyoubia Governorate

Memphis Language School

Answer the following questions :

Question

1

A Complete the following sentences :

1. Frequency of sonic wave, ranges between Hz and Hz.
2. The reflection is classified into two types which are and
3. The unit of sound intensity is, while the unit of noise intensity is
4. is considered the simplest form of oscillatory motion.
5. Calyx of a flower consists of green leaves called but corolla consists of coloured leaves called
6. From the artificial vegetative reproduction in plant are and
7. If the angle between the incident light ray and reflected light ray is 100° , so the angle of reflection =

B Give reasons for the following :

1. Light can travel through free space.

2. Water waves are transverse mechanical waves.
3. Peach fruit contains only one seed.

- C Compare between transverse wave and longitudinal wave :**
(concerning definition, components, wavelength and example)

Question 2

- A Write the scientific term for each of the following :**

1. Light intensity at a point is inversely proportional to the square distance between light source and this point.
2. A phenomena that appears in desert as a result of refraction and reflection of light.
3. The distance covered by light in one second.
4. A flower that contains androecium only.
5. The fusion of the pollen grain with the ovum.

- B Savart's wheel rotates with a rate 300 cycle per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of the gear. Calculate the number of teeth of the gear.**

- C Define :**

1. Pollination.
2. Light reflection.

Question 3

- A What happens when ... ?**

1. Light fall perpendicular on a reflection surface.
2. The ovary of the plant after fertilization.
3. When a pollen grain falls on the stigma of a flower.

- B Choose the correct answer :**

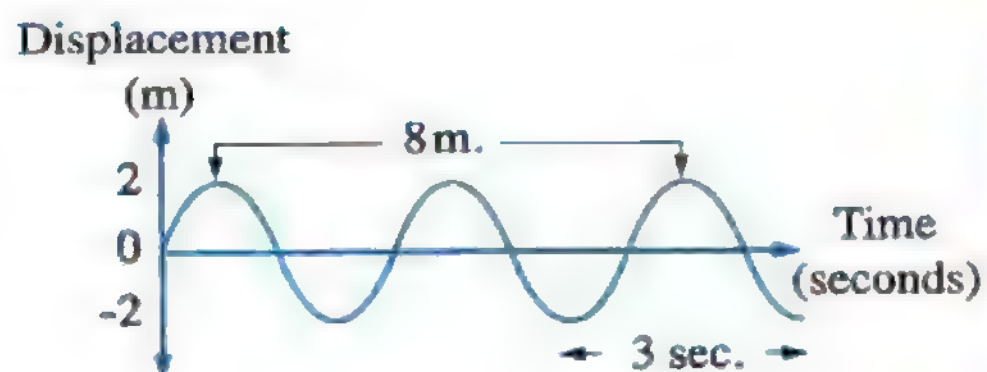
1. all the following factors affecting sound intensity except
a. amplitude. b. frequency. c. medium density. d. wind direction.
2. If the angle between the incident light ray and the reflecting surface = 40° , so the angle of reflection =
a. 30° b. 40° c. 50° d. 60°
3. The sound of frequency 200 Hz is than the sound of frequency 100 Hz.
a. stronger b. sharper c. weaker d. harsher
4. The floral whorl which is not found in the female flower
a. calyx. b. androecium. c. corolla. d. no correct answer.
5. The amplitude of the harmonic tone is that of fundamental tone.
a. smaller than b. larger than c. equal to d. (a) and (b) are correct.

PART

3

C From the opposite calculate :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.



Question

4

A What is meant by ... ?

1. Sound pitch.
2. Sonic waves.
3. The absolute refractive index of water is 1.33

B Put (✓) or (✗) and correct the wrong ones :

1. Drill is an example of musical tones. ()
2. The wall of ovary after pollination forms the coat of the fruit. ()
3. Man can't reproduce asexually. ()
4. The sound quality is the property by which the ear can distinguish between strong and weak sound. ()
5. The typical flower contains three whorls. ()
6. The sound intensity increases as the amplitude increases. ()

C Mention one function :

1. Calyx of the flower.
2. Ovary.

Additional questions

A Choose the correct answer :

1. The incubation period of syphilis disease ranges from
 a. 1 to 4 days. b. 1 to 4 weeks.
 c. 2 to 3 days. d. 2 to 3 weeks.
2. The quanta of colour has the lowest energy.
 a. blue b. violet c. green d. red

B What happens when ?

The thickness of the transparent medium increases concerning the quantity of light that passes through it.

14 Sharkia Governorate

Omar Al-Farouk E.L.S.

Answer the following questions :

Question

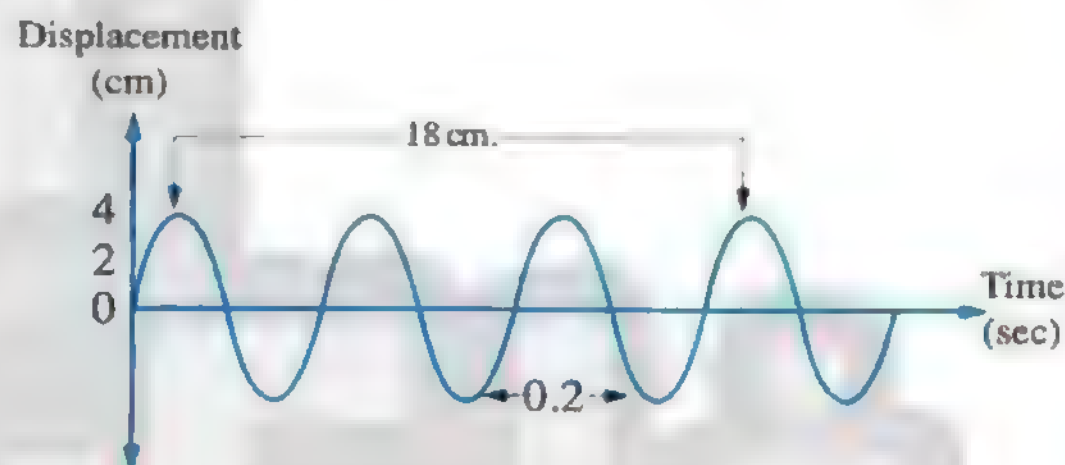
1

A Complete the following sentences :

1. Voice of man is and its frequency is
2. is a group of green leaves but is a group of colored leaves.
3. When light ray travels from to it refracts near to the normal.
4. Velocity of oscillating body is when it passes the rest point and is away from the rest point.

B Calculate from the figure :

1. Amplitude.
2. Periodic time.
3. Wavelength.
4. Frequency.
5. Wave velocity.
6. Number of complete waves.



Question

2

A Give reason for :

1. Palm flowers are unisexual.
2. Motion of rotary bee isn't oscillatory motion.
3. Absolute refractive index of any transparent medium is always greater than one.

B Give one importance for :

1. Testosterone.
2. Ultrasonic.
3. Midpiece in the sperm.
4. A glass triangular prism.

Question

3

A Correct the underlined words :

1. Ovary extends from the uterus and ends by external genital opening.
2. Measuring unit of sound intensity is m/sec.
3. Grafting by wedge in which scion is attached to stock.
4. Oscillatory motion is the motion that is repeated regularly in equal time.
5. Light refraction is rebounding of light wave in the same medium.

B Draw : The structure of ovum.

C Calculate the frequency of sound produced by metallic plate of savart's wheel with a gear of 300 teeth if time taken by the wheel to make 500 rotations is 5 sec.

PART

3

Question

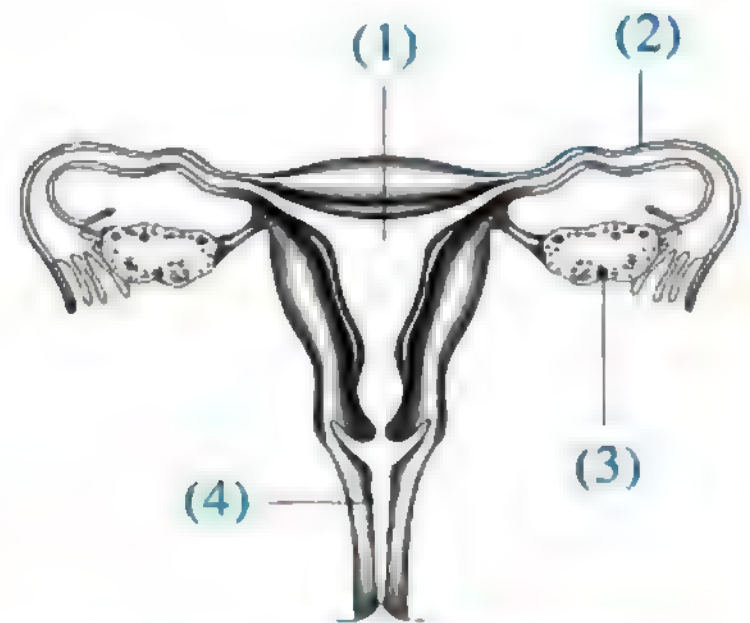
4

A Compare between :

1. Transverse and longitudinal waves.
2. Sperm and ovum.
3. Sonic and infrasonic waves.

B Study this figure, then answer the questions :

1. What does this figure represent ?
2. Replace the numbers in the figure by suitable labels.
3. What is the label in which the embryo is delivered to life ?



C Calculate the wavelength of the sound wave propagating in sea water with velocity 1500 m/sec. knowing that the frequency of wave is 10 Kilohertz.

Additional questions

A Choose the correct answer :

1. Light can easily transmitted through media.
a. transparent b. opaque c. translucent d. no correct answer
2. All of the following are symptoms of puerperal sepsis disease except
a. high body temperature. b. headache. c. face paling. d. chilling.

B What happens when ?

The recently laboured mother is subjected to air currents.

15

El-Menofia Governorate

Quesna Educational Directorate

Answer the following questions :

Question

1

A Complete the following sentences :

1. The sound velocity is measured in unit while the sound intensity is measured in
2. and are from the features that indicate puberty in females.
3. The light reflection is classified in two types which are and
4. Each testis in the human male is attached with a number of highly looped tubes known as
5. The bisexual flower contains and, but the male flower contains only.

B If sound waves have frequency 400 Hz in air and its wavelength is 85 cm., Calculate the velocity of the these waves.

C Mention one function for :

1. Calyx.

2. Testes.

Question 2

A Write the scientific term for each of the following :

1. The angle between the incident ray path and the normal at the incidence point on the reflecting surface.
2. A flower that contains gynoecium only.
3. The maximum displacement made by the oscillating body away from its original point.
4. The distance covered by sound in one second.

B Give reasons for the following :

1. The light is considered an electromagnetic transverse wave.
2. The usage of ultrasonic waves to sterilize food.
3. The floor of the swimming pool appears higher than its original position.

C Compare between each of the following :

Ovum and sperm of human. (three points only)

Question 3

A Choose the correct answer :

1. The organ responsible for formation the ova in the flower is the
a. Ovary. b. anther. c. corolla. d. calyx.
2. The frequency of the oscillating body is measured by a unit called
a. Hertz. b. Watt/m². c. Decibel. d. m/sec.
3. The zygote contains of the genetic material of the plant species.
a. half b. all c. quarter d. third
4. If the angle between the incident ray and reflecting surface = 50, so the angle of reflection =
a. 40 b. 50 c. 130 d. 60
5. The artificial vegetative reproduction is done in plants by
a. cutting. b. grafting. c. tissue culture. d. all the previous.

B What will happen for ... ?

1. Light ray falls perpendicular on reflecting surface.
2. Ovary and ovum after fertilization.
3. Light ray travels from a more optically dense medium to less optically dense medium.

PART

3

Question

4

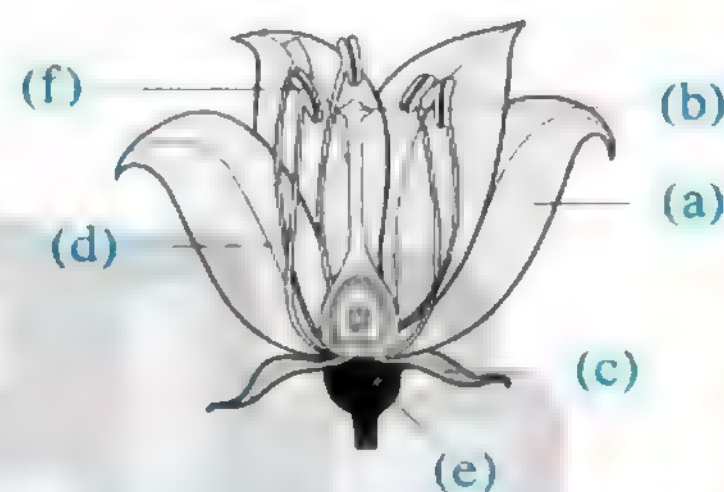
A Put (✓) or (x) and front of the following sentence then correct :

1. The frequency is the number of complete oscillations produced by the oscillating body in one second. ()
2. The swing is an example for the wave motion. ()
3. The periodic time is the time taken by the oscillating body to make half complete oscillation. ()
4. The corolla is the male reproductive organ in the flower. ()
5. The crest is the highest point in the transverse wave. ()

B What is meant by ... ?

1. The oscillating body makes 30 oscillations in one second.
2. Ultrasonic waves.

C Mention the name of figure and complete the labels on the drawing :



Additional questions

A Complete the following statements :

1. An ulcer at the tip of the penis in male is due to infection.
2. media don't allow light to pass through.

B Extract the unsuitable word or statement , then write the relation between the rest :

1. AIDS / Gonorrhea / Syphilis / Measles.

16

Dakahlia Governorate

Educational Directorate

Answer the following questions :

Question

1

A Choose the correct answer :

1. The flower is a modified
a. stem. b. leaf. c. root. d. branch.
2. The transverse waves consists of
a. crests and compressions. b. compressions and rarefactions.
c. crests and troughs. d. rarefactions and troughs.

3. hormone is responsible for the continuity of pregnancy.
 a. Testosterone b. Estrogen c. Thyroxin d. Progesterone
4. The pollen grain nucleus contains of the genetic material of the plant species.
 a. double b. half c. all d. quarter
5. The partial immersed pencil in water looks broken because of light
 a. deviation. b. reflection. c. total reflection. d. refraction.
6. After fertilization, the ovary develops forming the
 a. seed. b. flower. c. fruit. d. leaf.

B Complete the following statements :

1. The motion made by the oscillating body around its of rest.
 2. Sounds can be classified into two groups which ,
 3. The sperm consists of , midpiece and

Question

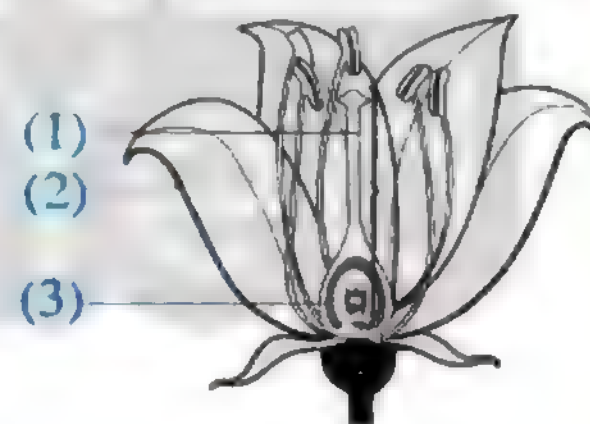
2

A Put (✓) or (x) for each of the following :

1. The velocity of the oscillating body is maximum, when passing at rest position. ()
 2. The tuning fork oscillation is an example for the periodic motion. ()
 3. The human female's ovule is a settled sphere shaped cell. ()
 4. The bisexual flower contains only gynoecium. ()
 5. The particles of the medium vibrate along the direction of the wave propagation in the longitudinal wave. ()
 6. The associated glands in the male genital system secrets nutrients and acidic fluid. ()

B From the opposite figure answer the following questions :

1. Write the label on.
 2. Mention the sex of the flower.
 3. What kind of pollination in this flower.



Question

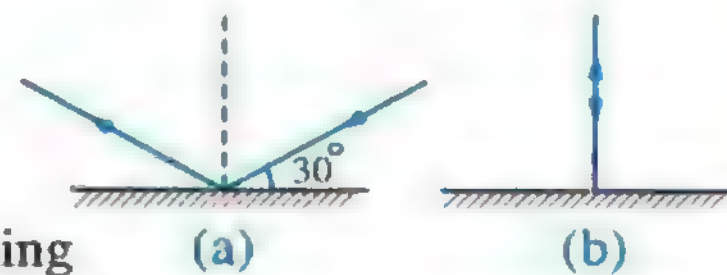
3

A Give reasons for each of the following :

1. The absolute refractive index for any transparent medium is larger than one.
 2. Flowers pollinated by insects produce coarse (rough) pollen grains.
 3. Sound travelling in air has less intensity than that travelling in carbon dioxide.
 4. The presence of testes outside the body in a sac-like structure called the scrotal sac.

B Answer the following :

1. Find the values of the angle of the incidence and the angle of reflection in (a , b)
 2. Calculate the periodic time and frequency for an oscillating body that makes 300 complete oscillations in half a minute.



Question

4

A Write the scientific term :

1. It is a natural phenomenon that takes place on the desert roads at noon especially in the summer times where objects on the road sides seem as if they had inverted images on wet area.
2. It is the maximum displacement done by the oscillating body away from its rest position.
3. It is a property by which the ear can distinguish between harsh and sharp voices.
4. The cell formed due to combination of sperm and ovum.
5. The reproduction of some plants by parts of the roots, stem or leaves.
6. It is the distance between the centres of two consecutive compressions or rarefactions.

B Calculate the frequency of a musical tone similar to the frequency of an emitted tone using savart's wheel rotated with a velocity of 360 cycles in one minute, given that the number of teeth of the gear is 25 teeth.

Additional questions

A Put (✓) or (x) then correct what is wrong :

1. Uterine cancer is a genital disease which doesn't arise from sexual contact. ()
2. Transparent media allow a part of light to pass through them. ()

B Give reasons for ... ?

1. The energy of violet photon is larger than that of blue photon.
2. Aluminium foil is an opaque medium.

17

Ismailia Governorate

Educational Directorate

Answer the following questions :

Question

1

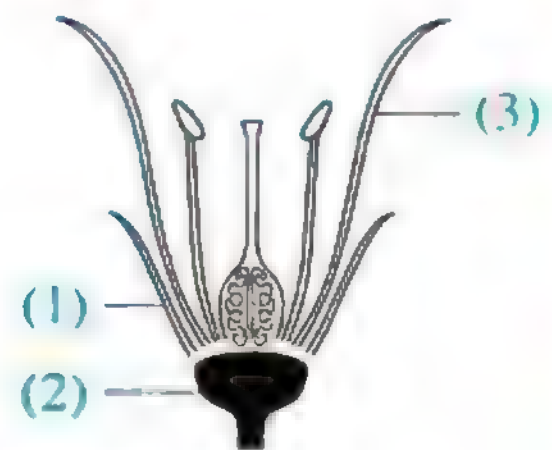
A Complete the following sentences :

1. In reflection, rays are reflected in one direction.
2. The male hormone is responsible for appearance of secondary sex characters.
3. The complete oscillation include 4 displacements, each one is called
4. sound wave accompany the blowing of storms before rainfall.
5. After fertilization the ovary of the flower grows forming the
6. Sharp sound has frequency than that of rough sound.
7. Measuring unit of sound intensity is

Final Examinations

B Give reasons for the following :

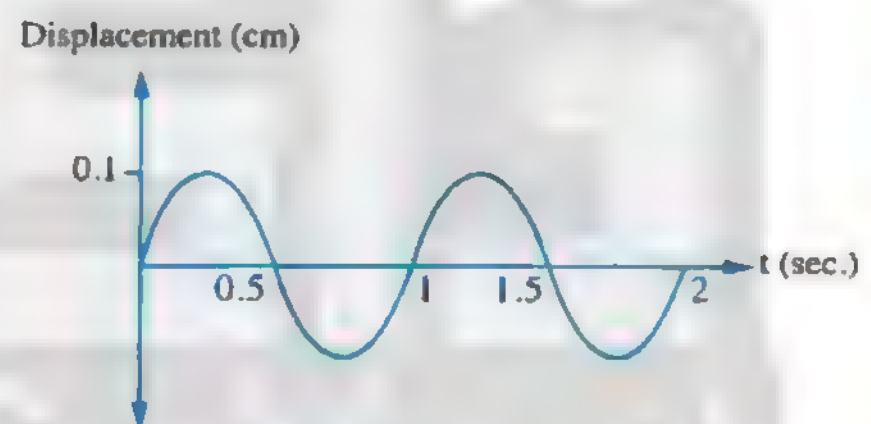
1. Sound waves are mechanical waves.
2. Absolute refraction index of any medium is always more than 1.
3. Fallopian tubes have funnel shaped opening and lined with cilia.

**C Complete the labels on the figure, and mention the sex of the flower.****Question****2****A Write the scientific term :**

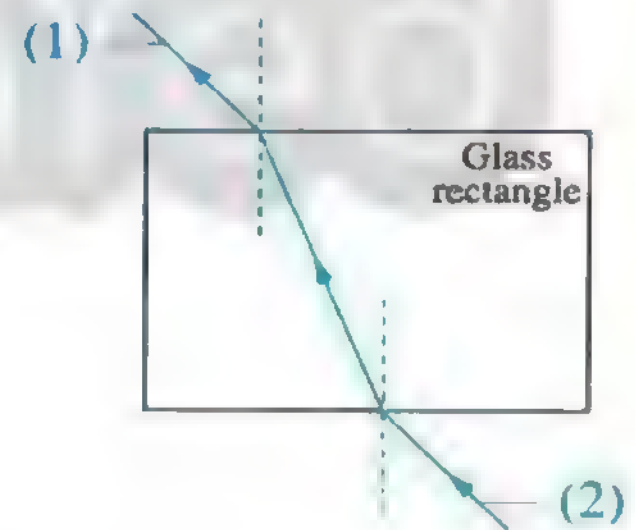
1. A property of sound by which the ear can differentiate between sounds from different sources, even if they have the same pitch & intensity.
2. An oval shaped gland that produces the male cells.
3. The highest point of the medium particles in transverse wave.
4. The ability of the medium to refract light.
5. The cell produced from fusion of male gamete and the ovum nucleus.
6. The direction of wave propagation.

B Examine the figure then answer the questions :

1. The amplitude
2. The periodic time
3. The frequency

**C Complete the labels on the figure :**

- (1) ray.
- (2) ray.

**Question****3****A Choose the correct answer :**

1. The result of multiplying frequency of body by its periodic time equals
a. 1 b. 0.5 c. 0.1 d. 4
2. All of the following are transverse waves except
a. sound. b. light. c. radio. d. water.
3. In reproduction by grafting, a branch of the plant containing more than one bud, known as is selected & attached to the already grown plant.
a. stock b. scion c. bud d. no correct answer

4. The angle between the refracted ray and the normal at incidence point on the separating surface is called angle of

- a. incidence. b. refraction. c. reflection. d. emergence.

5. The left ovary in the female human produces one ripe ovum every days.

- a. 28 b. 30 c. 56 d. 7

B What happens when ... ?

1. The oscillating body passes its rest position during its movement. (concerning its speed).
2. Particles of the medium vibrate along the direction of wave propagation.
3. A light ray falls perpendicular on a reflecting surface.
4. The sperm has no tail.

C Savart's wheel rotates with a rate of 300 cycles per minute, a sound of frequency 600 Hz is produced when a metallic plate touches one gear. find the number of teeth of the gear.

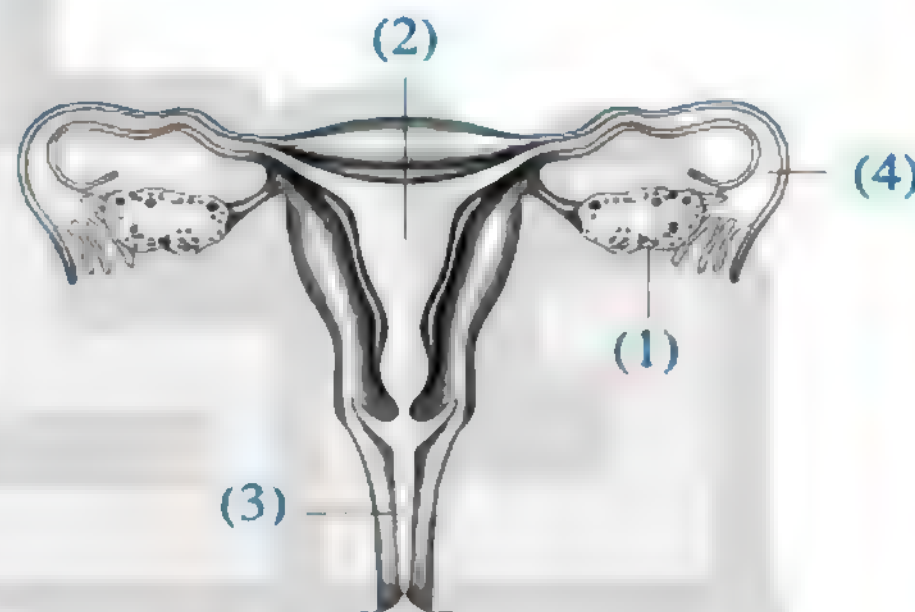
Question

4

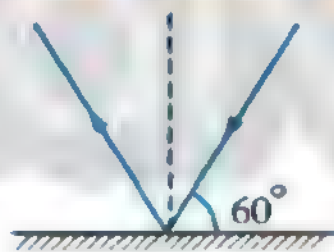
A What is meant by each of the following ... ?

1. Mixed (crossed) pollination.
2. The wavelength of sound waves is 30 cm.
3. The speed of wave.

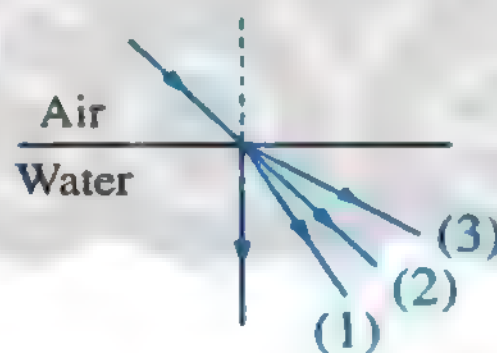
B Complete : The labels on the following figure and mention the name of the system.



C Examine the following figures, then complete :



1. Angle of reflection =



2. Which path is the right one, (1) or (2) or (3) ?

Additional questions

A Choose the correct answer :

The distance that light travels in a second is

- a. light frequency. b. light speed.
c. light intensity. d. no correct answer.

B Write the scientific term of each of the following :

1. A structure used in the analysis of light.
2. A genital disease, which infects a recently labored mother.

18

Port-said Governorate

Education Directorate

Answer the following questions :

Question 1

A Complete the following statements :

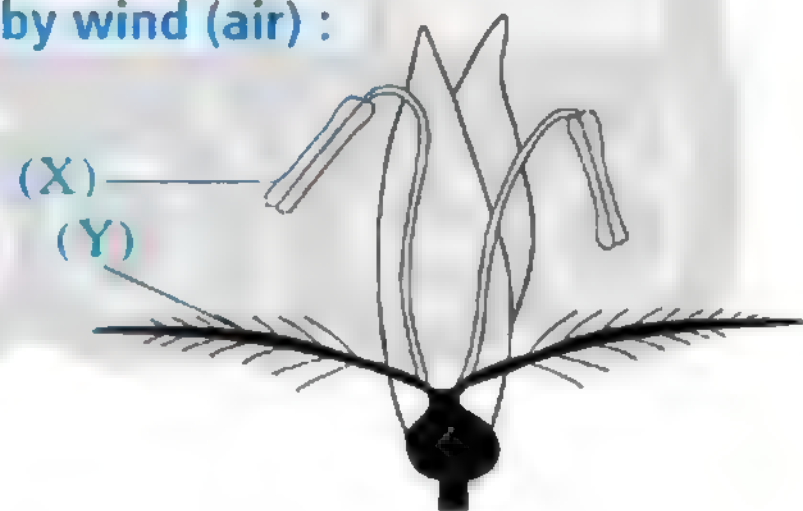
1. The hormones in male and hormones in female are responsible for the appearance of secondary sex characters.
2. The absolute refractive index of any transparent medium is always greater than
3. The outer whorl of the flower is called which consists of
4. Intensity of sound at point varies with square of the distance between that point and the second source.
5. Stamen of the flower consists of and
6. Sharp tones have frequencies, while rough tones have frequencies.

B Give reasons for :

1. We see lightning before hearing thunder.
2. The petals of corolla are colorful and scented.
3. Sound travelling in air has less intensity than that travelling in carbon dioxide.

C The opposite figure shown a flower being pollinated by wind (air) :

1. Write the labels for (x) and (y).
2. Mention two characteristic that make this flower pollinated by wind.
3. Explain how cross pollination happens in this flower.



Question 2

A Choose the correct answer :

1. The human ear can hear sounds of frequency
 a. 50 KHz. b. 30 KHz. c. 300 Hz. d. 10 Hz.
2. The right ovary in the female human produces a mature ovum every days.
 a. 24 b. 28 c. 34 d. 56
3. The result of multiplying the frequency of an oscillatory body by its periodic time equals
 a. 1/2 b. 1/4 c. 1/3 d. 1

PART

3

- B** Savart's wheel rotates with a rate of 300 cycle per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of one gear, Calculate the number of teeth of the gear.
- C** What is meant by ... ?
1. Tissue culture of a plant root.
 2. The angle of refraction of a light ray = 40°
 3. Sonic waves.
 4. Wavelength of a sound wave is 30 cm.

Question

3

- A** Correct the underlined words :

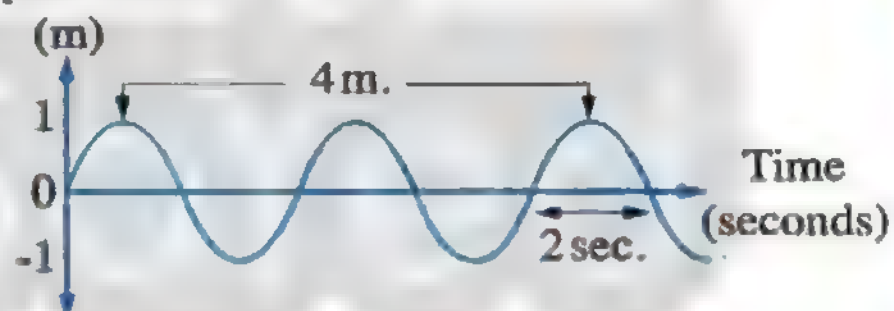
1. The angle of incidence light ray is greater than of reflection.
2. The stamen consists of stigma, style and ovary.
3. The motion of tuning fork is a wave motion.
4. The sound velocity through liquids is less than that through gases.
5. Ovaries produce sperms and male hormone.
6. Light is mechanical transverse waves.

- B** Compare between : The ovum and the sperm (concerning the motion and size).

- C** From the opposite figure, find :

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.

Displacement



Question

4

- A** Put (✓) or (✗) and correct the wrong :

1. Reproduction by tuber happens in orange and bitter orange. ()
2. The progesterone hormone is responsible for pregnancy to continue. ()
3. Sound intensity increases as the amplitude increases. ()
4. The fish is seen lower than its real position in the fish tank. ()
5. The human female's ovule is a settled sphere shaped cell. ()
6. The transverse wave consists of compressions and troughs. ()
7. Vas deferens stores the sperms. ()
8. Bats, dogs and dolphins can hear ultrasonic waves. ()

B Choose from column (B) what suits column (A) :

A	B
1. Protection of reproductive organs of the flower and has attractive color.	a. reflects on itself.
2. Distance covered by light in one second.	b. the change of the path of a light ray when it moves between two media with different optical densities.
3. Production of the sperms.	c. protect the inner part of a flower.
4. Light refraction.	d. male organ in a flower.
5. Androecium.	e. testes.
6. The light ray falling perpendicular in the plane mirror.	f. corolla.
	g. speed of light.

Additional questions

A Complete the following statements :

- is the period between the beginning of infection and the appearance of disease symptoms.
- and are examples of the transparent media.

B Rewrite the following statement after correcting the mistakes :

The frequency of the green light is lower than that of yellow light

19

Damietta Governorate

Damietta Educational School

Answer the following questions :

Question

1

A Complete the following statements :

- Harmonic tones are lower in and higher in than fundamental tones.
- Radio waves are considered waves that propagate in space with a velocity of
- The absolute refractive index of any transparent medium is always one.
- Artificial vegetative reproduction is carried out by and
- The measuring unit of the frequency is but the measuring unit of the noise intensity is
- The small green leaves protecting the inner parts of the flower is called

B Mention one use (function) for each of the following :

- Ultrasonic waves.
- Cowper's gland.
- Tissue culture.
- Placenta.

- C** If the frequency of a sound wave is 200 Hertz and its wavelength equals 1.5 meter, Calculate : the velocity of sound propagation in air.

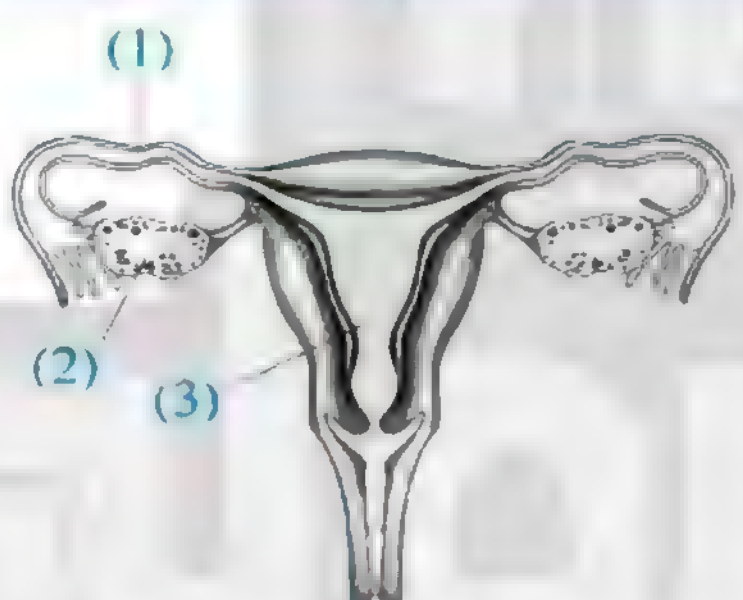
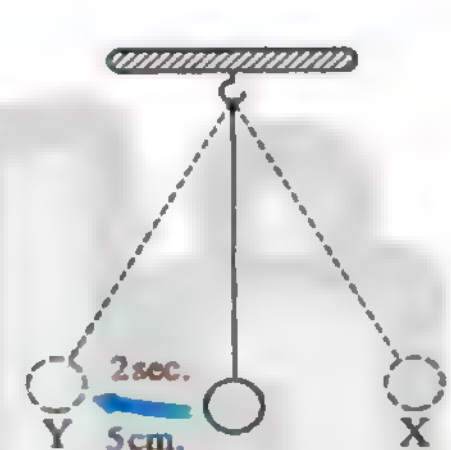
Question

2

- A** Write the scientific term for the following :

1. A flower that contains androecium and gynoecium.
2. A phenomenon that appears in the desert as a result of refraction and reflection of light.
3. Sound waves have frequency less than 20 Hz.
4. A part of the sperm that contains one half of the genetic material (chromosomes).
5. It is the pollination which is carries out by man.
6. The ability of the medium to refract light rays.

B

(a)	(b)
 <p>From the figure answer the following :</p> <ol style="list-style-type: none"> 1. The figure represents 2. Write the labels (1) , (2) , (3). 3. What is the structure in which fertilization occur ? 4. What is the structure in which the fetus is growing ? 5. What is the structure which secretes estrogen ? 	 <p>From the figure find :</p> <ol style="list-style-type: none"> 1. Amplitude. 2. Periodic time. 3. Frequency. 4. Distance covered in a complete oscillation.

Question

3

- A** Choose the correct answer :

1. Zygote contains of the genetic material of plant species.
a. half b. all c. quarter d. three quarter
2. Rarefaction is the area of the medium, at which the medium particles
a. don't vibrate. b. are too close to each other.
c. are faraway from each other. d. vibrate up and down.
3. The angle between the incident light ray and the reflected light ray is 40° , so the angle of reflection is
a. 20° b. 40° c. 80° d. 90°

Final Examinations

4. The right ovary in the female human produces a mature (ripe) ovum every days.
 a. 24 b. 28 c. 34 d. 56
5. The human ear can hear sounds of frequency KHz.
 a. 90 b. 70 c. 50 d. 10

B What is meant by ... ?

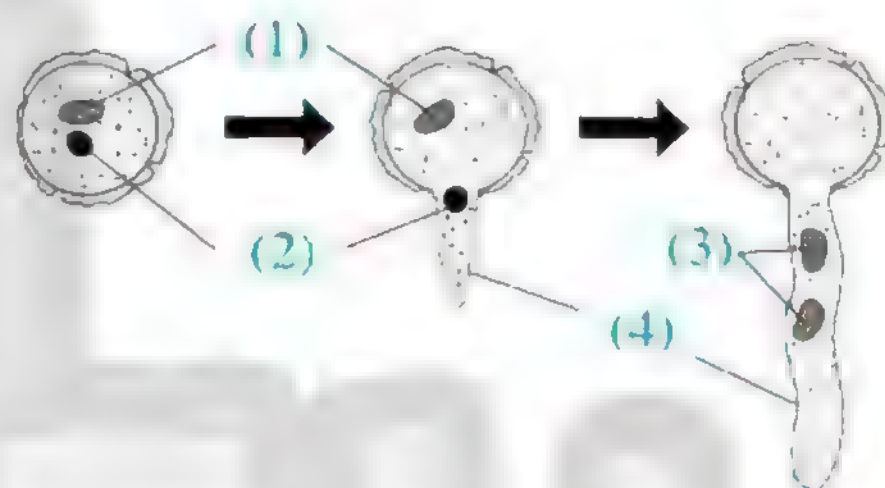
1. The angle of emergence. 2. Sound pitch. 3. Fertilization.

C What happens in the following cases ... ?

1. A light ray falls perpendicular on a reflecting surface.
 2. The middle part (midpiece) of a sperm is damaged.

D From the figure answer the following ?

1. The figure represents
 2. Write the labels (1) , (2) , (3) , (4)
 3. What happens when this structure falls on the stigma of a flower.

**Question 4****A Give reasons for :**

1. A light waves are considered electromagnetic waves.
 2. The inner wall of fallopian tubes is lined with cilia.
 3. Sound of man is harsh, while sound of woman is sharp.
 4. The presence of testes outside the body in the scrotal sac.

B Compare between each of the following :

1. Petunia flower and palm flower.
 2. Regular and irregular reflection of light.
 3. Transverse wave and longitudinal wave.

C Correct the underlined words :

1. Sweet potatoes is reproduced by grafting.
 2. The sound intensity decreases by increasing the density of the medium and vice versa.
 3. The testosterone hormone is responsible for the continuity of pregnancy.

Additional questions**A Put (✓) or (x) then correct what is wrong :**

1. Bad smelling secretions from the uterus is from the symptoms of syphilis disease. ()
 2. Milk, wood and cartoon are examples of transparent media. ()

B Give reasons for :

It is preferred to install mercury bulbs in car's head lights.

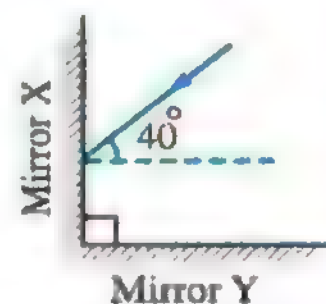
Answer the following questions :

Question

1

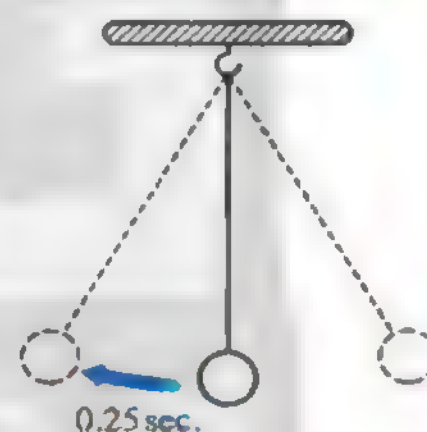
A Complete the following statements :

1. Kinetic energy of simple pendulum reaches its when it passes its rest position.
2. The crest in wave is equivalent to in longitudinal wave.
3. From the opposite figure :
The angle of reflection of the ray on Mirror (Y) is
4. Testes secrete hormone, while ovaries secrete the female hormones and progesterone.



B What happens in each of the following cases ... ?

1. Increasing the frequency of a wave to its double when the wave velocity is constant. (Concerning wavelength)
2. To the ovary after fertilization in plants.
3. Transferring a light ray from glass to air.
4. When the frequency of this simple pendulum in the opposite figure, is equal to its periodic time ?



Question

2

A Write the scientific term for each of the following :

1. It is the motion produced as a result of the vibration of the particles of the medium in a certain moment and in a certain direction.
2. It is the rebound of light waves in the same medium on meeting a reflecting surface.
3. It is the process of transfer of pollen grains from the flower's anthers to the stigmas.
4. A tube with a funned shaped opening transport the ovum to the uterus.

B Mention one use or function for each of the following :

1. Radio waves.
2. Ultrasonic waves in medical fields.
3. Corolla.
4. Genital glands in male.

- C Savart's wheel rotates with a rate of 300 cycles per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of gear. Calculate the number of teeth of the gear.

Question

3

A Choose the correct answer :

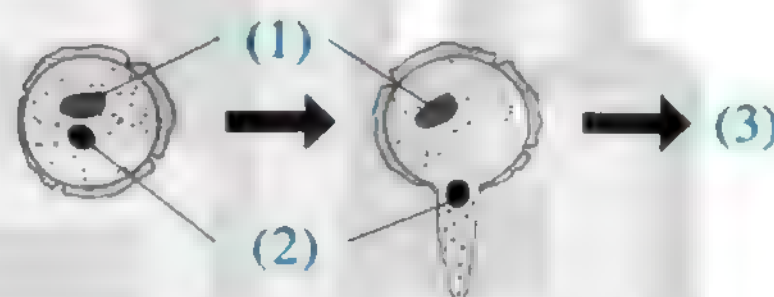
- If the frequency of an oscillating body was 2 Hz, so the time of one amplitude is sec.
a. 1/2 b. 1/4 c. 1/8 d. 2
- The sound of frequency 200 Hz is than the sound of frequency 100 Hz.
a. stronger b. sharper c. weaker d. harsher
- The produced fruits by grafting belong to the type of the
a. scion. b. cut. c. stock. d. bud.
- Water waves propagate through 10 m, by frequency 5 Hz in 5 seconds, so the number of waves and velocity of propagation respectively are
a. 50 waves, 2 m/s. b. 25 waves, 2m/s. c. 100 waves, 5m/s. d. 25 waves, 5m/s.

B Give reason for each of the following :

- The piano sound differs from that of a violin even if they the same pitch and intensity.
- The fish in water is seen in an apparent position slightly above its real position.
- Palm flowers are unisexual.

C From the opposite figure :

- The figure represents
- Write the labels of the figure ?
- Draw stage number (3) from this figure ?



Question

4

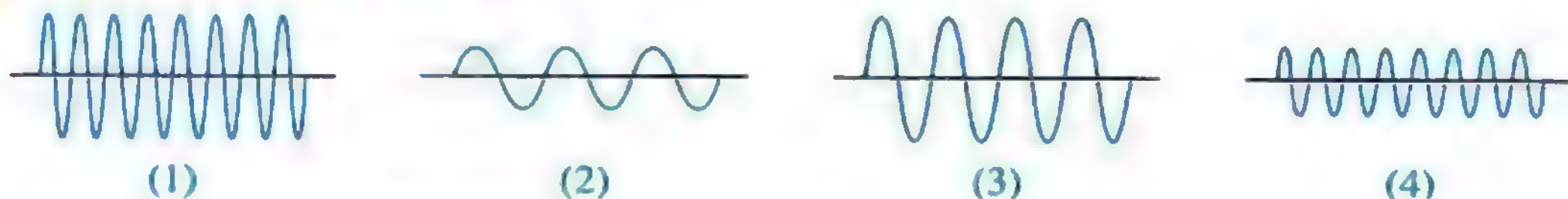
A Correct the underlined words in the following statements :

- Grafting by wedge is applied in Mango trees.
- The absolute refractive index of any transparent material is always smaller than one.
- In pollination by water the flower has feathery like and sticky stigma.
- Particles of the medium vibrate along the direction of wave propagation in the transverse wave.

B Compare between :

The sperm and the ovum. (in terms of : Number - size - motion)

C From the following figures :



- The figure represents the strongest harsh sound.
- The figure represents the sharp weak sound.
- The figure represents the minimum frequency.

Additional questions

A Extract the unsuitable word or statement, then write the relation between the rest :

1. Vomiting / High body temperature / Chilling / Face paling.
2. Wood / Concrete / Air / Metal.

B Put (✓) or (x) then correct what is wrong :

1. Puerperal sepsis disease can infect both male and female. ()
2. The objects can be seen clearly through transparent media. ()

21

Fayoum Governorate

Educational Directorate

Answer the following questions :

Question

1

A Complete the following statements :

1. A complete oscillation comprises successive displacements, each of which is called
2. The sperm consists of, middle part and
3. Angle of is the angle between the refracted light ray and at the point of incidence on the separating surface.
4. The crest in wave is equivalent to in longitudinal wave.
5. The after fertilization forms the fruit.

B What is meant by ... ?

1. Wavelength of longitudinal wave.
2. Pollination.
3. Light reflection.

C What is the importance of ... ?

1. Sonar sets.
2. Savart's wheel

Question

2

A Correct the underlined words in the following statements :

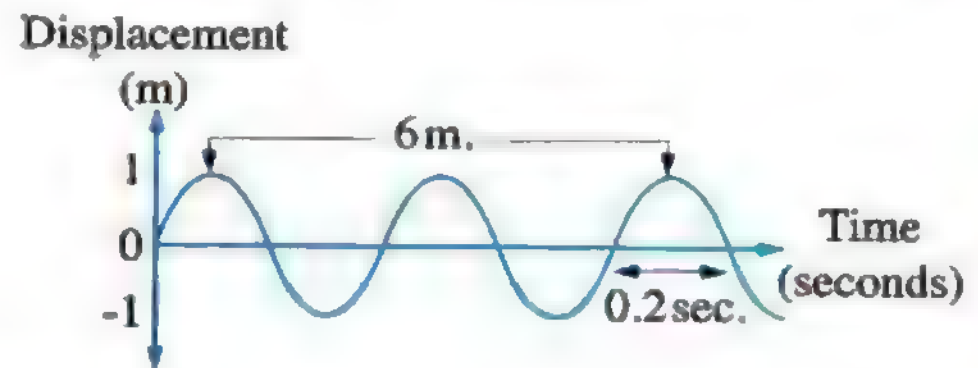
1. The result of multiplying the frequency of an oscillating body by its periodic time equals variable value.
2. Hermaphrodite flowers take the symbol ♂.
3. Angle of refraction = angle of reflection.
4. A body of frequency 200 Hertz makes a complete oscillation in 2 seconds.
5. Sonic waves of frequency range between 10 Hertz to 200 kilo Hertz.
6. The estrogen hormone is responsible for pregnancy to continue.

B Compare between each of :

1. Ovary and testes (found in which system).
2. Longitudinal waves and transverse waves. (direction of vibration of medium particles to direction of wave propagation)

C From the opposite figure, find :

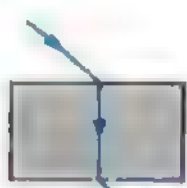
- | | |
|-----------------|--------------------|
| (a) Wavelength. | (b) Frequency. |
| (c) Amplitude. | (d) Wave velocity. |

**Question****3****A Write the scientific term for each of the following statements :**

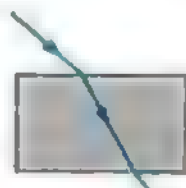
1. The number of complete oscillations produced by the oscillating body in one second.
2. The property by which the human ears can distinguish between sounds either strong or weak.
3. Changing the path of light when travel from a transparent medium to another transparent medium of different optical density.
4. A new method to produce large numbers of plants from a small part of it.
5. A natural phenomenon takes place on the desert roads at noon especially in the summer times.

B Choose the correct answer to complete the following statements :

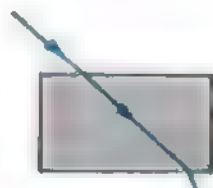
1. Fertilization occurs when is formed.
a. embryo b. zygote c. endometrium d. ovum
2. If the distance between the centre of the third compression and the centre of the fifth compression on the wave propagation is 40 cm, Then, the wavelength of this wave is
a. 40 cm. b. 20 cm. c. 10 cm. d. 5 cm.
3. A sound wave travels in air with velocity 330 m/s and has a wavelength of 0.1 m, its frequency is
a. 330 KHz. b. 3300 Hz. c. 33 KHz. d. 330 Hz.
4. Choose from the following figures the one that express correctly the refraction of light in a rectangular glass block is the figure



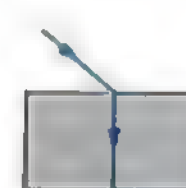
(a)



(b)



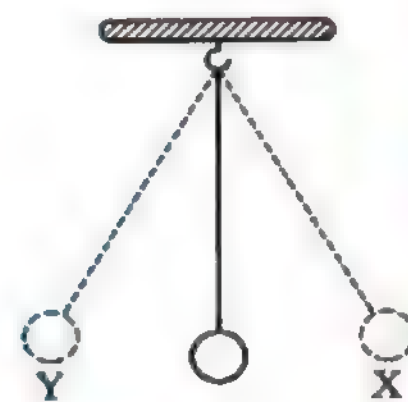
(c)



(d)

5. In the opposite figure when the ball of the pendulum moves from (x) to (y) in a duration of 0.01 seconds, the frequency equals Hertz.

- a. 0.04 b. 0.02
c. 25 d. 50



E Calculate the velocity of light in glass given that the velocity of light in air equals 3×10^8 m/s and the absolute refractive index of glass is 1.5.

D What happens in the following cases ... ?

The increasing in the frequency of a wave to double its value with respect to the wavelength when the wave velocity is constant.

Question

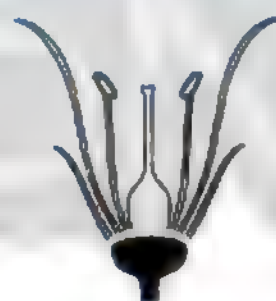
4

A Give reasons for :

1. The man, whose testicles are still present inside the abdominal cavity, is infertile (sterile).
2. Auto pollination can't happen in sunflowers
3. Sound can be heard from all surrounding directions.

B Calculate the frequency of a musical tone similar to the frequency of an emitted tone using Savart's wheel rotated with a velocity of 960 cycles in two minutes, given that the number of teeth of the gear is 30 teeth.

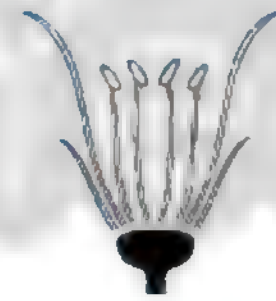
C Mention the sex of each of the following flowers :



1. Flower :



2. Flower :



3. Flower :

Additional questions

A What is meant by ?

1. Translucent media.
2. Incubation period.

B Rewrite the following statements after correcting the mistakes :

1. White light is a mixture of five colours known as bright colours.
2. Syphilis disease is caused by spherical bacteria.

22

Minya Governorate

Minya Official Language School

Answer the following questions :

Question

1

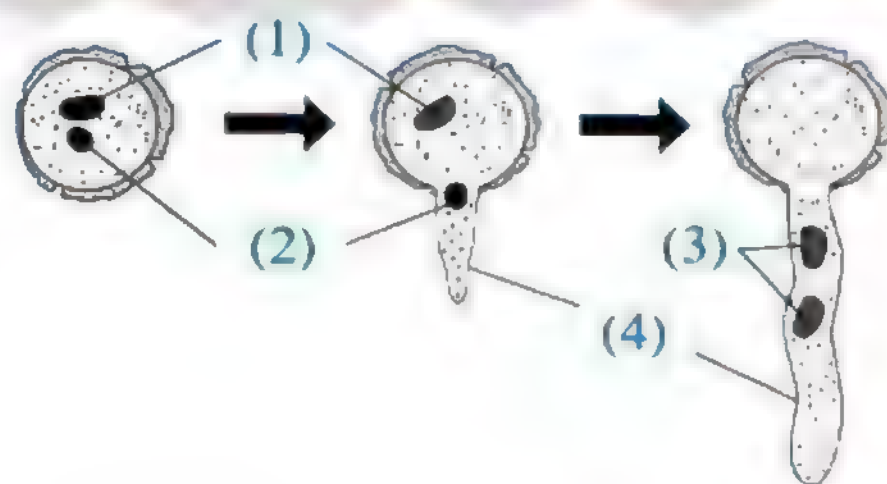
A Choose the correct answer :

- The complete oscillation includes displacements.
 - two successive
 - three successive
 - four successive
 - two successive
- The floral which is not found in female flower is
 - calyx.
 - gynoecium.
 - androecium.
 - corolla.
- If the distance between the sound source and the ear increased 3 times, so the sound intensity
 - decreases to half.
 - increases 3 times.
 - decreases to 1/3.
 - decreases to 1/9.
- When the incident ray falls perpendicular on a reflecting surface, the angle of reflection equals
 - 120°
 - 0°
 - 90°
 - 60°
- Fertilization occurs when is formed.
 - embryo
 - zygote
 - endometrium
 - ovum
- Sound frequency 200 Hz is sound of frequency 100 Hz.
 - sharper than
 - stronger than
 - harder than
 - weaker than
- The periodic time of an oscillating body which makes 240 oscillations in one minute =
 - 1 sec.
 - 1/4sec.
 - 1/2 sec.
 - 4 sec.

B Savart's wheel rotates with rate of 150 cycle per minute. If the number of teeth of the gear is 60 teeth Calculate sound frequency.

C Study the opposite figure, then answer :

- the figure represents
- write the labels of the figure.



Question

2

A Complete the following statements :

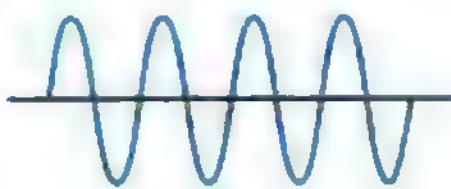
- Sweet potatoes are considered as , while the potatoes are and reproduction in them is done by
- differ according to the nature of the ovary either containing one or many ova.
- The absolute refractive index for water is the ratio between and
- The simple harmonic motion is considered the simplest form of motion.

PART

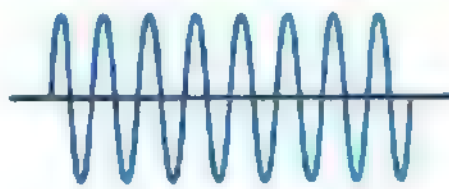
3

- B Define :** 1. Pollination. 2. Refraction angle.

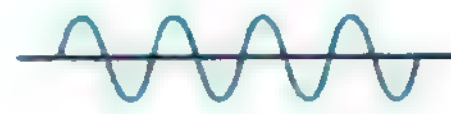
- C Study the following figures, then answer the questions :**



(a)



(b)



(c)

1. Which of these figures represents woman voice ?
2. Which of these figures represents strong harsh sound ?
3. Complete : sound intensity is measured by, but noise intensity is measured by

Question

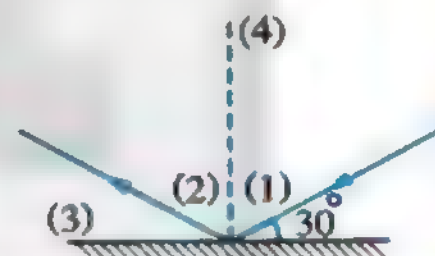
3

- A What happens when ... ?**

1. A stigma of a flower doesn't secrete sugary solution after pollination process.
2. The sound wave travels from air to water (concerning its velocity).
3. The oscillating body reaches the position of its max. displacement during its movement.
4. The wavelength increases to the double value when the wave velocity is constant. (concerning the frequency)

- B Look at the opposite figure then answer :**

1. Complete labels 1,2,3 and 4.
2. Calculate the measurement of angle number 2
3. The angle of incidence is the angle number and it equals



- C What is meant by ... ?**

1. The distance between two successive crests in infra-red wave.
2. Sound waves have frequency less than 20 Hz.

Question

4

- A Write the scientific term for each of the following :**

1. The cell resulting from the fusion of pollen grain and the ovum nucleus.
2. The waves that need a medium to propagate.
3. The property by which ear can differ between two sounds even have same pitch and intensity.
4. A swollen part in the flower carries floral whorls.

- B Give reasons for :**

1. The petals of corolla are colored and scented.
2. Ultrasonic waves are used in sterilizing the food.
3. If the candle is put in front of a tuning fork, the candle flame vibrates.
4. Sound intensity in the presence of carbon dioxide gas as a medium is stronger than in air.

C Correct the underlined words :

1. Sugar cane is reproduced by grafting.
2. The wall of the ovary after fertilization form fruit.
3. The rose is a group of flowers arranged on the same axle.
4. Particles of the medium vibrate along the direction of the wave propagation in the transvers waves.

Additional questions

A Complete the following statements :

1. Visible light is one of the components of electromagnetic spectrum of wavelength ranges between to nanometres.
2. The microbe that causes the syphilis is

B Give reasons for :

Wood doesn't allow the passage of light through it.

23

Aswan Governorate

Aswan Educational Directorate

Answer the following questions :

Question

1

A Complete the following statements :

1. The bisexual flower contains and
2. The velocity of the oscillating body is maximum, when it passes through
3. The complete oscillation includes displacements each of them is called
4. In the reproductive system of the human male, each testis is attached to highly looped tubes known as.....
5. From the natural phenomena that are related to the refraction and reflection of light are..... and
6. The absolute refractive index is the ratio of to

B Give reasons for :

1. The use of ultrasonic waves in milk sterilization.
2. The petals of corolla are colorful and scented.

Question

2

A Write the scientific term :

1. The number of complete oscillations produced by the oscillating body in one second.
2. Sound waves of frequencies less than 20 Hz.

PART

3

3. Short stem where the leaves developed and modified into reproductive organs.
4. A hormone produced by the testes.
5. The incident ray and the reflected ray and the normal from the point of incidence on the reflecting surface all locate in the same plane perpendicular on the reflecting surface.

B What is meant by the following ... ?

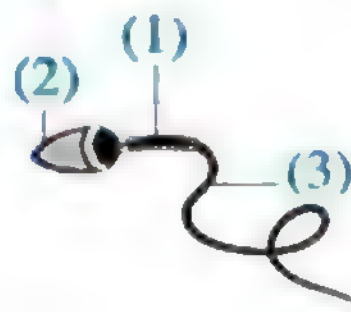
1. Pollination.
2. The wavelength of a sound wave = 1.5 m.

Question**3****A Put (✓) or (x) :**

1. The sound quality is the property by which the ear can distinguish between strong sounds and weak sounds. ()
2. The calyx is the male reproductive organ in the flower. ()
3. The light ray refracts towards the normal, when it travels from air to glass. ()
4. The human female's ovule is a settled sphere shaped cell. ()
5. The particles of the medium vibrate along the direction of the wave propagation in the longitudinal waves. ()

B Calculate the frequency of a musical tone similar to the tone produced from a savart's wheel rotating with a velocity of 960 revolution in 2 minutes, knowing that the number of gear teeth = 30.**Question****4****A Choose the correct answer :**

1. The sound waves are waves.
 - a. longitudinal
 - b. transverse
 - c. electromagnetic
 - d. no right answer.
2. Fertilization occurs when is formed.
 - a. embryo
 - b. zygote
 - c. endometrium
 - d. ovum
3. All the following methods are examples for the artificial vegetative reproduction except
 - a. cutting.
 - b. bulbs.
 - c. grafting.
 - d. tissue culture.
4. If the angle between the incident ray and the normal at the point of incidence on the reflecting surface = 50, so the angle of reflection =
 - a. 40°
 - b. 50°
 - c. 130°
 - d. 60°

B Write the labels on the following figure :

Additional questions

A Put (✓) or (×) then correct what is wrong :

1. Appearance of tumors in liver, bones and parts of genital organ are from the symptoms of syphilis disease. ()
2. Light is a mechanical transverse waves. ()

B Write the scientific term of the following :

The scientist who proved that the energy of the photon depends on its frequency.

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New Valley Governorate

El-Dakhla Educational Directorate

Answer the following questions :

Question

1

A Complete the following statements :

1. Sharp tones have frequencies, while rough tones have frequencies.
2. The crest in the wave is equivalent to the in the longitudinal wave.
3. is the male reproductive organ in the plant, while is the female reproductive organ in the plant.
4. Harmonic tones are lower in and higher in than fundamental tones.

B Give reason for each of the following :

1. Vegetative reproduction is considered asexual reproduction.
2. The periodic time decreases as the number of complete oscillation increases.
3. The pen seems broken when it is put in a glass of water.
4. The use of ultrasonic waves in milk sterilization.

C Sound waves have frequency 400 Hz in air and its wavelength is 85 cm., Calculate the velocity of this wave.

Question

2

A Write the scientific term for each of the following :

1. Short stem which leaves are developed and modified into reproductive organs.
2. The measuring unit of wavelength.
3. It is disturbance which the particles of the medium vibrate along to the direction of wave propagation.
4. The flower that has four whorls.
5. The fusion of male gamete nucleus with the female gamete nucleus.

PART

3

B Compare between :

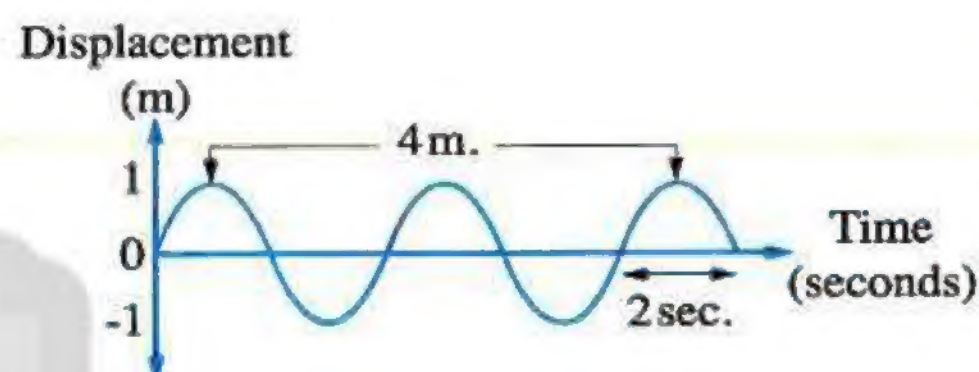
1. Sperm and ovum (mobility).
2. Grafting by attachment and grafting by wedge.

C Define each of the following :

1. Light reflection.
2. Amplitude.

Question**3****A From the opposite figure, Find :**

1. Wavelength.
2. Frequency.
3. Amplitude.
4. Wave velocity.

**B What is meant by ... ?**

1. Angle of incidence = 30°
2. The number of complete oscillation made by an oscillating body in 10 seconds is 500 complete oscillation.

C Choose from column what suits the words of group :

(A)	(B)
1. It is used to determine the frequency of unknown tone	a. female reproductive organ in the flower.
2. An electromagnetic wave that can travel through free space	b. pollination.
3. The process by which pollen grain transfer from the anther of flower to the stigma of flower	c. savart's wheel.
4. Gynoecium	d. light.

Question**4****A If the frequency of the sound produced by touching metallic plate with a gear in savart's wheel is 100 Hz calculate the number of the gear teeth if the wheel rotates with speed 200 cycle/minute.****B What happens when ... ?**

1. Decreasing the amplitude of sound source to its half (concerning to sound intensity).
2. The ovaries stop secreting progesterone.

C Correct the underlined words in the following statements :

1. The produced tone from tuning fork is called complicated tone.
2. The measuring unit of sound intensity is m/sec.
3. Growing prevents living organisms from extinction.
4. Rainbow phenomenon takes place on desert roads at afternoon specially in summer.
5. Structure the stamen is stigma, style and ovary.

Additional questions

A Choose the correct answer :

- If the frequency of red colour is 4×10^{12} Hz, the frequency of violet colour is $\times 10^{12}$ Hz.
a. 1.5 b. 3.5 c. 4 d. 7.5
- The human skin is considered as a/an medium.
a. transparent b. opaque c. translucent d. no correct answer.

B Write the scientific term :

A genital disease from its symptoms high elevation in body temperature, face paling and bad smelling secretions from uterus.

25 South Sinai Governorate

Tur Sinai Educational Directorate

Answer the following questions :

Question

1

A Write the scientific term for each of the following :

- The angle between the emergent light ray and the normal at the point of emergence on the interface.
- A property of sound by which the ears can distinguish between sharp and rough sound.
- A short stem whose leaves are developed and modified into reproductive organs.
- A disturbance that propagates and transfers energy along the direction of propagation.
- The intensity of sound at a point varies inversely with the square of the distance between the point and the sound source.
- A hollow pear shaped organ has a muscular wall that can expand as the fetus grows.
- Part of root, stem, or leaf that taken from a plant for reproduction.

B Give reasons for each of the following :

- We see lightning before hearing thunder.
- Ultrasonic waves are used to sterilize milk.
- The sperm contains the middle part.
- Plants produce pollen grains by huge numbers.

- C Calculate the absolute refractive index of diamond given that the speed of light through it is 1.25×10^8 m/s, knowing that speed of light through air is 3×10^8 m/s. Write the law.

PART

3

Question

2

A Choose the odd word out, then link between the rest words :

1. Water wave – Radio wave – Light wave – Sound wave.
2. Prostate – Fallopian tube – Uterus – Ovary.
3. Sepals – Petals – Tubers – Carpels.

B Compare between :

1. The sperm and the ovum (related to the volume).
2. Infrasonic and sonic waves (related to the frequency).

C Calculate the frequency of an oscillating body makes 300 complete oscillation in half minute, Write the law

D The opposite graphs represent two sound waves complete :

1. Figure represent high pitch.
2. Figure represent high intensity.

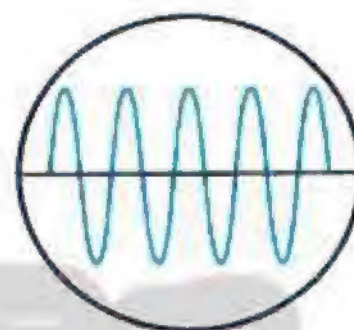


Fig. (1)

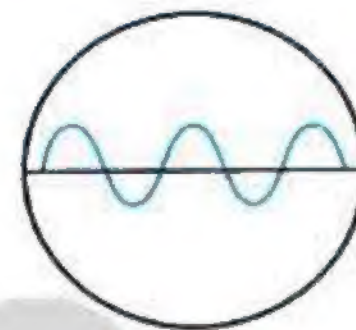


Fig. (2)

Question

3

A Correct the underlined words :

1. The estrogen hormone responsible for the appearance of secondary sex characters in male.
2. The flower which pollination is occurred by insects has hanged anther and sticky stigmas.
3. The measuring unit of noise is Watt/m².
4. The transvers waves consist of compressions and rarefactions.
5. Light waves used in radars.
6. The motion of clock pendulum is a transitional motion.
7. The complete oscillation includes two amplitudes.

B What is meant by ... ?

1. Tulip flower is a hermaphrodite flower.
2. The wavelength of sound wave is 30 cm.

C Write one importance of :

1. Jacuzzi.
2. Savart's wheel.
3. Vas deferens.

Question 4

A Join from (A) to (B) :

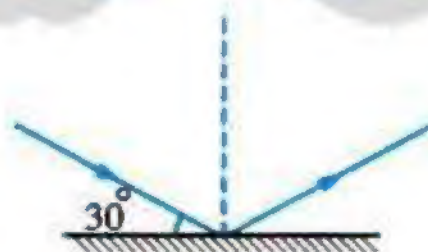
(A)	(B)
1. Light ray travels from glass to air	a. sound intensity increases
2. Fusion of the nucleus of the male gamete with the nucleus of the female gamete	b. germinates forming pollen tube
3. Sound source touches a resonance box	c. refracts nearer to the normal.
4. Pollen grains sticks on the stigma	d. forming zygote
	e. refracts far from normal

B Choose the correct answer :

- If frequency of an oscillating body = 6 Hz , so the periodic time = second.
a. 6 b. $\frac{1}{6}$ c. 0.6 d. 0.006
- Sound of different musical instruments can be differentiated from each other by
a. harmonic tones. b. fundamental tone. c. sound intensity. d. sound pitch.
- The zygote contains of number of chromosomes.
a. half b. all c. quarter d. double
- The ovary of the flower contains one ovule.
a. olives b. tomato c. bean d. peas
- The submerged object in water is seen in an apparent position slightly above its real position due to of light.
a. reflection b. interference c. diffraction d. refraction

C A sound wave of frequency 200 Hz and wavelength 1.7 m., calculate its speed in air. Write the law.

D In following figure calculate the angle of incidence and angle of reflection.



Additional questions

A Put (✓) or (✗) then correct what is wrong :

- The incubation period of puerperal sepsis disease ranges from 1 to 4 weeks. ()
- Energy of the photon = planck's constant + frequency of the photon. ()

B Give reason for :

- A tissue paper is a translucent medium
- It is necessary to wear masks during labour process.